How You Can Use Television

New Device For Increased Drying

Complete Round-Up Of Drive Belt Data

PAPER TRADE JOURNAL

APRIL 16, 1956

SEVEN IN A ROW . . . A pound of steam that enters these septuple effect Swenson Evaporators at Longview Fibre removes up to six pounds of water from spent cooking liquors.

Half a Million Pounds

OF EVAPORATOR CAPACITY PER HOUR!

Lower operating costs through increased evaporator steam economy! That is the story at Longview Fibre Company, Longview, Washington, since Swenson Evaporators were installed. The two septuple effect evaporators provide capacity to evaporate one-half million pounds of water per hour!

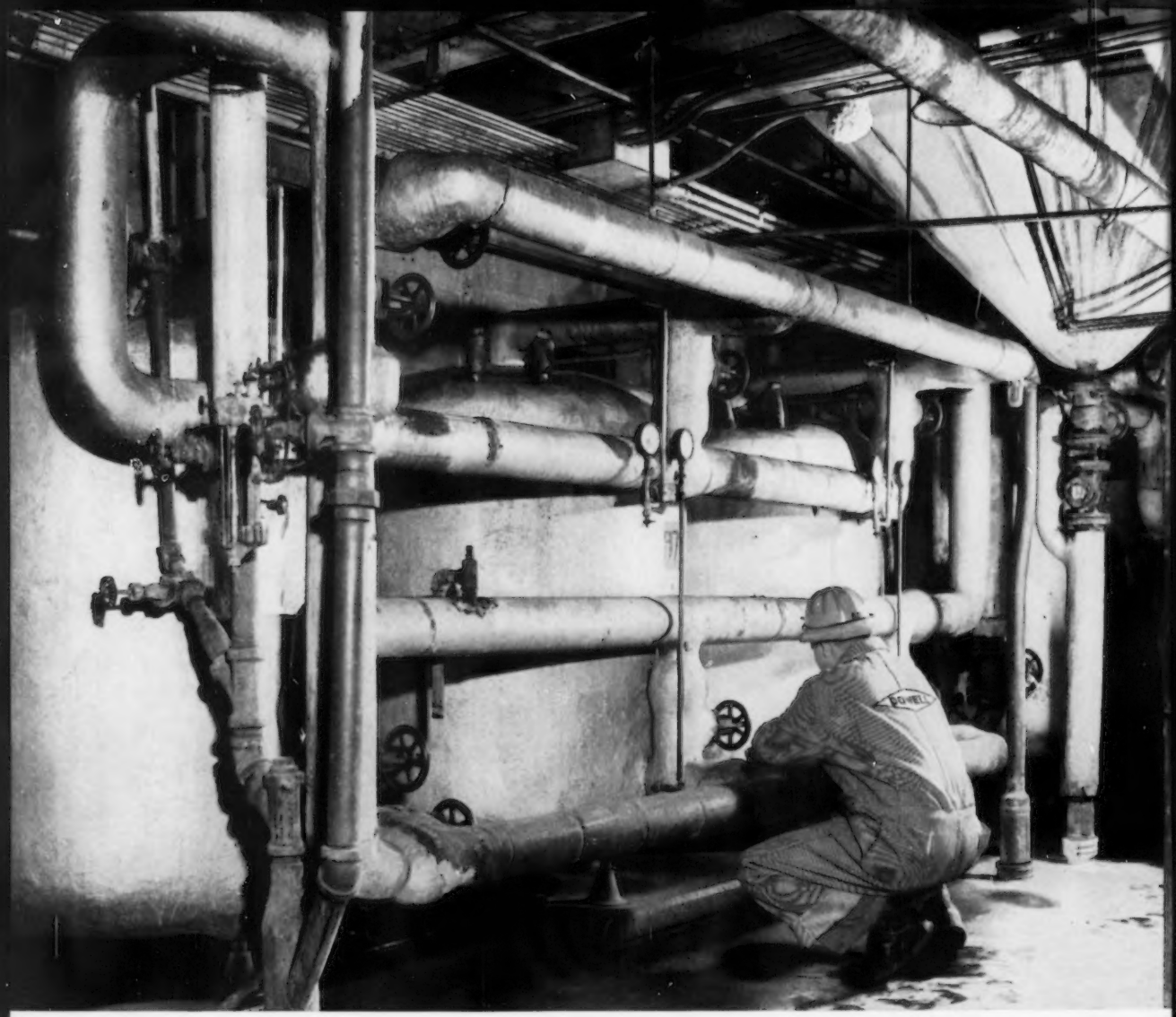
The Longview economy story is not new to Swenson. Ninety per cent of the septuple effect evaporators in use today were engineered by Swenson. Put Swenson's engineering know-how and experience to work in your plant. Call a Swenson engineer . . . now.

SWENSON EVAPORATOR COMPANY
15687 Lathrop Avenue, Harvey, Illinois

SWENSON
Proved Engineering for the Process Industries
SINCE 1887

A Division of WHITING Corporation

Evaporators • Pulp Washers • Filters
Digester Blow Condensers
Turpentine Condensers



There's too much at stake —clean it right

Chemical cleaning involves costly equipment and often work stoppages. It's a job for experts. Let Dowell protect that equipment and keep production losses to a minimum when you have scale or sludge problems.

In over 15 years our trained engineers have serviced virtually every kind of equipment in plants, mills and refineries throughout industry. In fact, Dowell has cleaned over 10,000 boilers alone!

This experience means lower costs to you—in more thorough work, restored efficiency and less production loss.

Furthermore, Dowell engineers know you value the safety of your men and equipment. Dowell uses only the latest safety equipment and techniques to eliminate hazards and accidents. Our engineers work closely with your safety personnel to establish the safest possible working procedures.

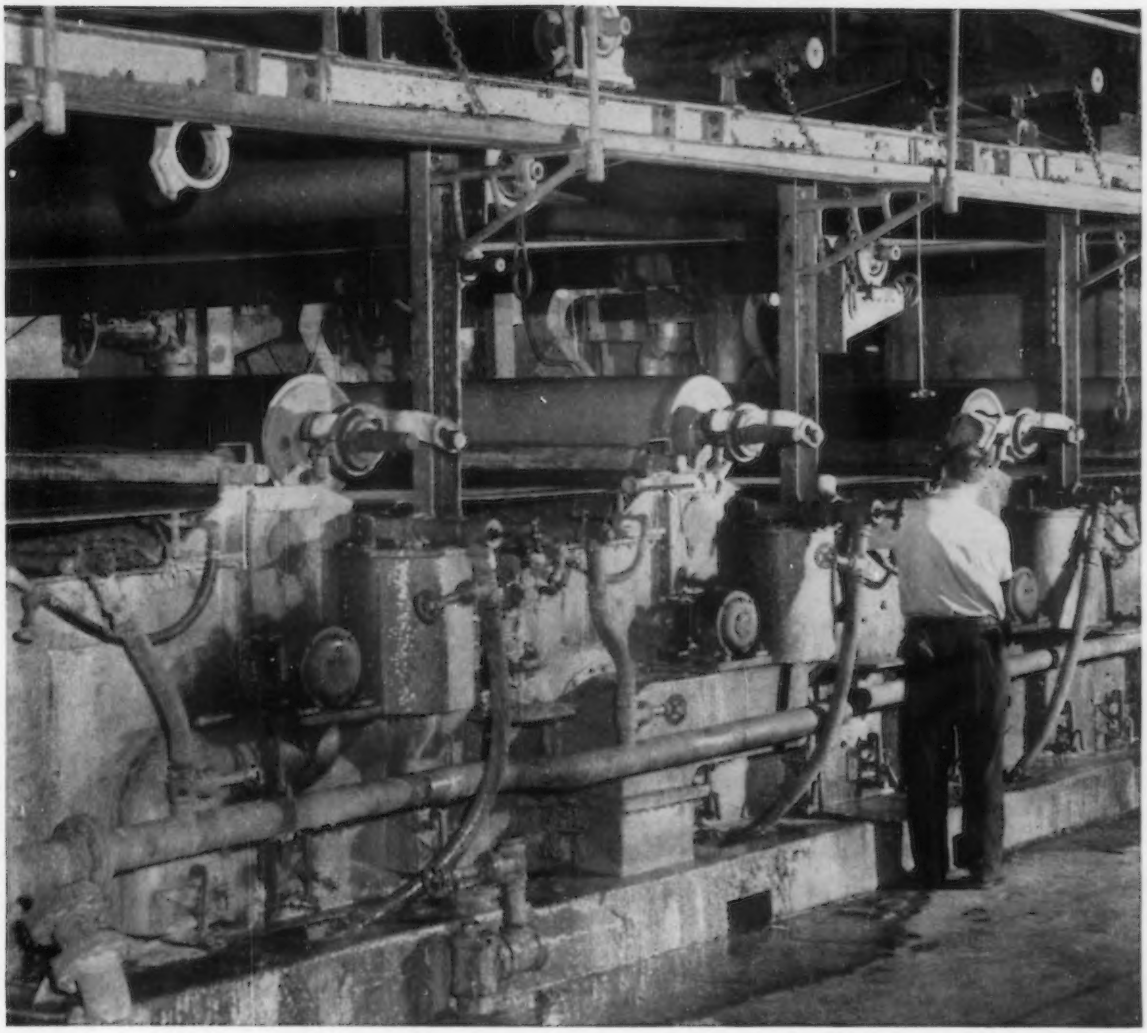
Call the nearest of more than 165 Dowell offices. An experienced engineer will be glad to talk over and help you with your cleaning problems any time — at no obligation. Or write Dowell Incorporated, Tulsa 1, Oklahoma, Dept. D-63.

chemical cleaning service for industry

DOWELL

A SERVICE SUBSIDIARY OF THE DOW CHEMICAL COMPANY

B.F.Goodrich



Longer life, better paper formation with B. F. Goodrich couch rolls

YOU can get smoother, more uniform paper formation by equipping your cylinder machines with B. F. Goodrich couch rolls. That's because the covers of these rolls are made of a special rubber, tough enough to stand years of use, yet soft so the rolls couch perfectly without causing any crush marks to form in the tender stock.

In addition to better performance, B. F. Goodrich couch rolls have many cost-saving advantages. Cover separation is impossible because the rubber is locked to the steel by the patented B. F. Goodrich Vulcalock process, the strongest rubber-to-steel adhesion that is known today.

There's no danger of rust spots staining the felt or sheet because the ends of the roll are sealed against moisture.

In the picture above, you see just a few of the B. F. Goodrich couch rolls in use at Ohio Boxboard Company, Rittman, Ohio. With all their cost-saving advantages, no wonder this company has been a satisfied user since 1930. Let a B. F. Goodrich representative show you how longer-lasting paper mill rolls can improve the quality of your paper and save you money. *The B. F. Goodrich Company, Dept. M-622, Akron 18, Ohio.*

B.F.Goodrich

INDUSTRIAL PRODUCTS DIVISION

A $.95 SAVING
PER TON OF PAPER* with

Size Requirements (without Nalco 680)	30.25 lb.
Size Requirements (with Nalco 680)	21.60 lb.
Pounds of Size Saved	8.65
Alum Requirements (without Nalco 680)	40.00 lb.
Alum Requirements (with Nalco 680)	30.00 lb.
Pounds of Alum Saved	10.00
Savings on Size (at 15.3 cents per lb.)	$1.32
Savings on Alum (at 2.2 cents per lb.)	.22
	$1.54
Less Cost of Nalco 680 (at 10.7 cents per lb.)	.59
TOTAL NET SAVING, per ton of paper	$.95

STABILIZED *Sodium Aluminate*

**Cutting size and alum requirements is only one advantage of Nalco 680 — the best, the most stable commercial grade sodium aluminate you can buy! Use it for higher pH and lower acidity!*

Don't confuse the production saving in this case history with a cutback in essentials. This mill makes fine writing paper, and quality is the number one requirement.

How Nalco 680 improved specifications while cutting the cost is obvious in the following: *Size test ratings jumped from a range of 45-50 up to 50-60. Ash content went from 5.6-5.8% to 7-7.1%.*

There are many, many other case histories of Nalco 680 success — power savings, greater alumina retention, cleaner machines, better products.

If you would like results like this in your mill, we suggest you check with your Nalco Representative. He has the facts on Nalco 680 applications and will help you all along the way.

NATIONAL ALUMINATE CORPORATION
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CANADA: Alchem Limited, Burlington, Ontario
NORTHWESTERN UNITED STATES, HAWAII and ALASKA
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WEST GERMANY: Deutsche Nalco-Chemie GmbH

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REMEMBER THESE DATES

MAY 7-9: Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

JUNE 12-14: National Meeting of Superintendents Assn., Lake Placid Club, Lake Placid, N. Y.

JUNE 13-15: Summer Meeting Tech. Sec., Canadian Pulp and Paper Assn., Manor Richelieu, Murray Bay, Que.

JULY 9-20: Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

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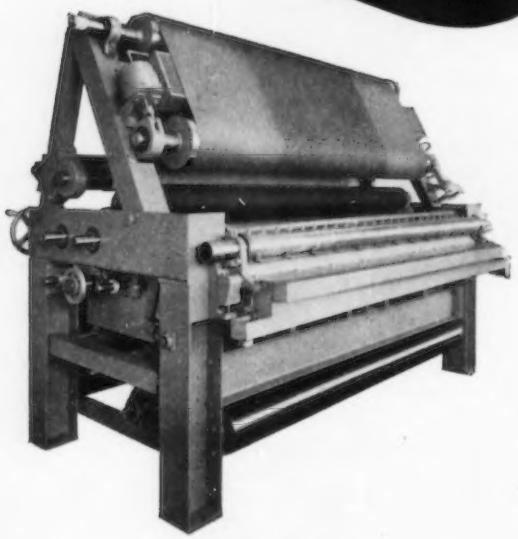

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Featuring new advanced design,
the Air Coater coats one side of a web with the
coating metered by a "knife" of high velocity
air. Ideal for photographic, book, label, litho
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he's HUYCKing your way...

The object of the periodic visits of *your* Huyck Field Service Engineer is, of course, a friendly one: he wants to help you lower felt costs and keep them low.

Technically trained in both felt and paper making, he will not only work with you in correcting operational difficulties, but offer you the benefit of his know-how in analyzing your specific machine clothing requirements as well.

Huyck is able to make *new* improved quality felts for you—an important factor in reducing your costs—by coordinating the efforts of the largest field service, design and development staffs in the felt industry.

Only Huyck has assigned a Field Service Engineer to each and every mill. Look for the engineer who serves you. He'll be HUYCKing your way shortly.

NEW!
HUYCK FELTS

FIRST IN QUALITY... FIRST IN SERVICE

F. C. HUYCK & SONS • Rensselaer, New York
Established 1870

IN CANADA: KENWOOD MILLS LTD.
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...for superior paper

Use OK BRAND Starches

at no extra cost

the complete paper mill line

	Wet-End Additives	Press & Tub Sizes	Coating Adhesives	Calender Sizes
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There's an OK Brand product especially formulated for every paper mill operation requiring starches and adhesives ...and there's no extra cost for these top-quality OK BRAND products.

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Manufacturing better products from corn for 75 years

THE HUBINGER COMPANY 1881 1956

Keokuk, Iowa

Design Factors in Telemetering Systems

Four important points to consider in planning for remote measurement or recording

A BRISTOL APPLICATION NOTE

Telemetering systems provide a proven way to keep tabs on a remotely located process, pipe line, service or utility. In fact, any time remote indication recording, or control is required, telemetering can serve your needs.

Here are the four conditions which must be considered in selecting the best telemetering system for any installation.

1. VARIABLES

Most industrial variables can now be measured, computed, and converted into a form that can be transmitted electrically. Their number and variety influence circuit complexity and the appearance of the receiving panel. Some variables now being successfully telemetered include:

Pressure • Current and voltage • Temperature • Flow • Electrical power • Wind velocity • Liquid level • Motion • BTU's • pH Horsepower • Speed

2. FREQUENCY OF READING

While the majority of telemeter systems in service today are the point-to-point continuous recording type, complex networks and interrelated variables are making sophisticated approaches more and more necessary. The problem usually boils down to these questions: how often is measurement necessary, and what is the least costly way to install and run the system?

Five types of possible hook-ups are:

Continuous recording—where variables are critical and need constant watch.

Intermittent indicating—where variables need only be checked at intervals.

Continuous-Intermittent—where it is possible to separate more critical variables for constant and intermittent telemetering.

Grouped-Multiplex—where several measurements can be transmitted as a group over a single circuit into a "multiplexed" receiver.

Successive-Multiplex—where measuring points over a large area can be "multiplexed" at intermediate locations, then herded to the panel.

3. TERRAIN

The type of interconnecting circuit between the measuring transmitters and central panel usually depends on the terrain: its topography, weather, and degree of settlement. Hence, signals may be carried by one, or by combinations, of the basic transmission media:

Radio—various types of radio can be used to take signals over mountains, deserts, and seas.

Wire—strung wire or leased lines can cover plant, urban, and rural areas.

4. INSTRUMENTATION

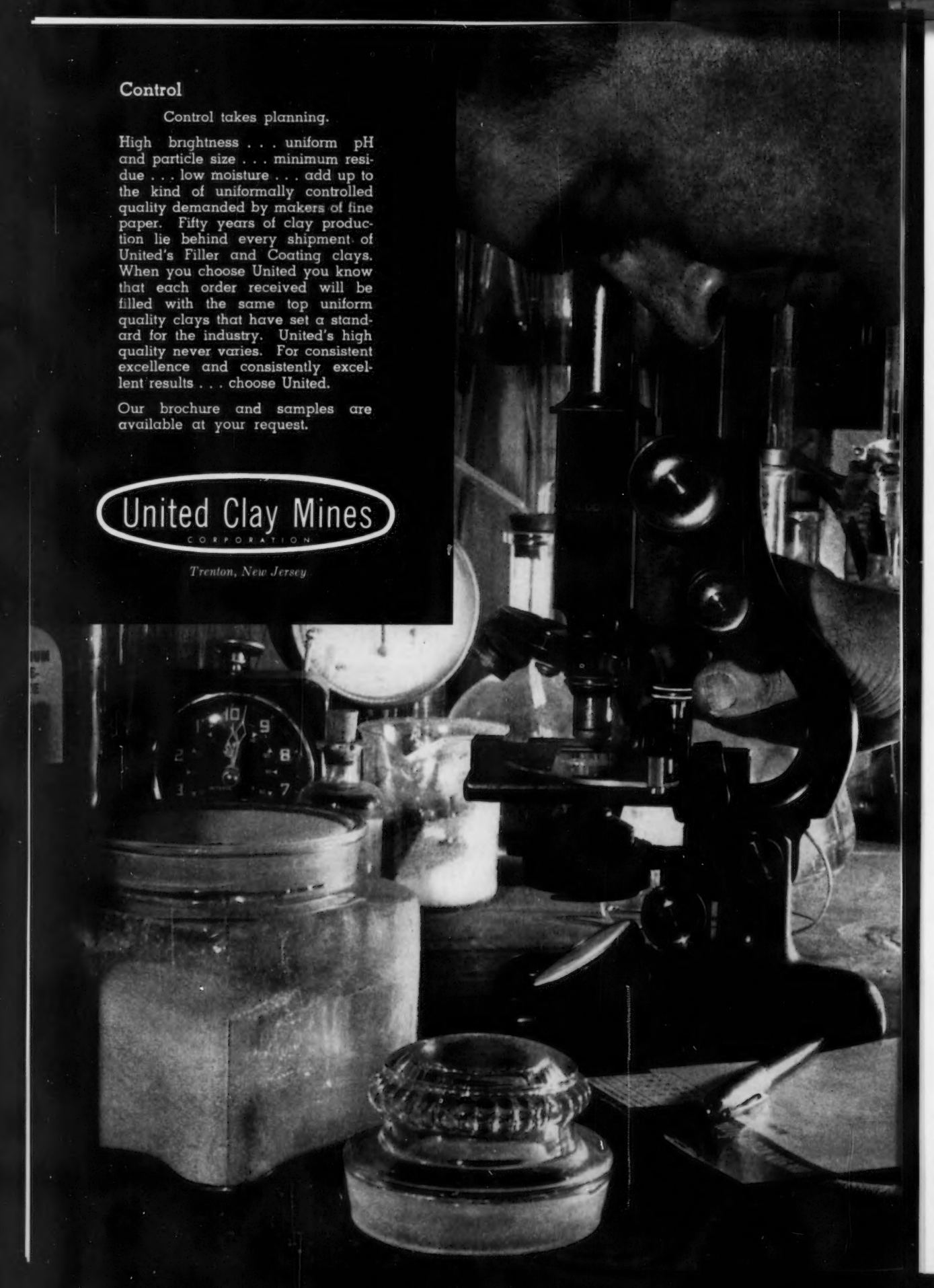
Bristol Metameter® Telemeters are eminently adapted to any of the conditions of measurement frequency, variables, or terrain likely to be encountered in telemetering. Transmission can be provided over telephone circuits, carrier current, radio—including microwave, VHF and UHF—and private wires, multiplexing and selective calling. Under all sorts of conditions, thousands of installations, ranging from just a few to hundreds of instruments each, have proven the dependability and reliability of Bristol Telemeters—pulse width (or duration), differential transformer, and voltage types, as well as pneumatic systems.

For more information on how Bristol Telemeters can benefit *you*, write THE BRISTOL COMPANY, 166 Bristol Road, Waterbury 20, Conn. 5.44

TYPICAL RECEIVING CENTER in multiplexed telemetering system.

BRISTOL *POINTS THE WAY IN HUMAN-ENGINEERED INSTRUMENTATION*

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS



Control

Control takes planning.

High brightness . . . uniform pH and particle size . . . minimum residue . . . low moisture . . . add up to the kind of uniformally controlled quality demanded by makers of fine paper. Fifty years of clay production lie behind every shipment of United's Filler and Coating clays. When you choose United you know that each order received will be filled with the same top uniform quality clays that have set a standard for the industry. United's high quality never varies. For consistent excellence and consistently excellent results . . . choose United.

Our brochure and samples are available at your request.

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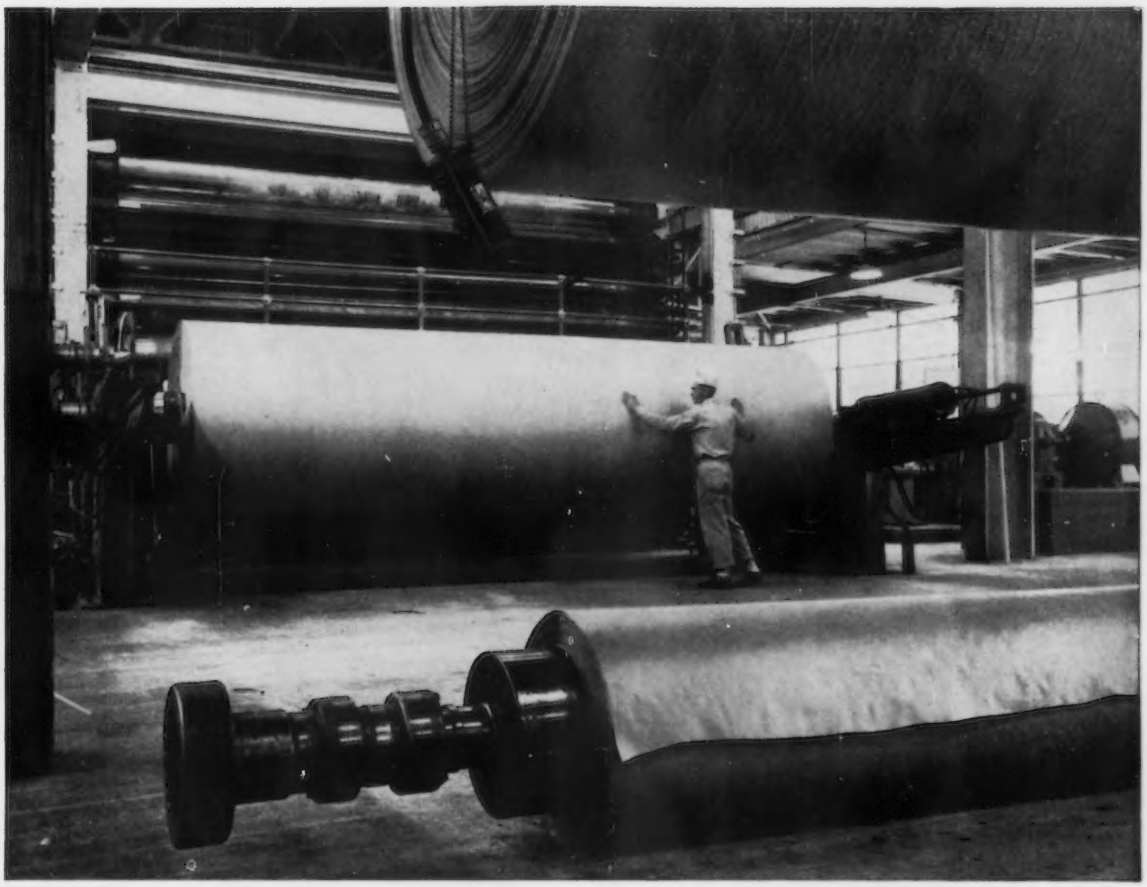


here's a new metal for pulp and paper mills— TITANIUM

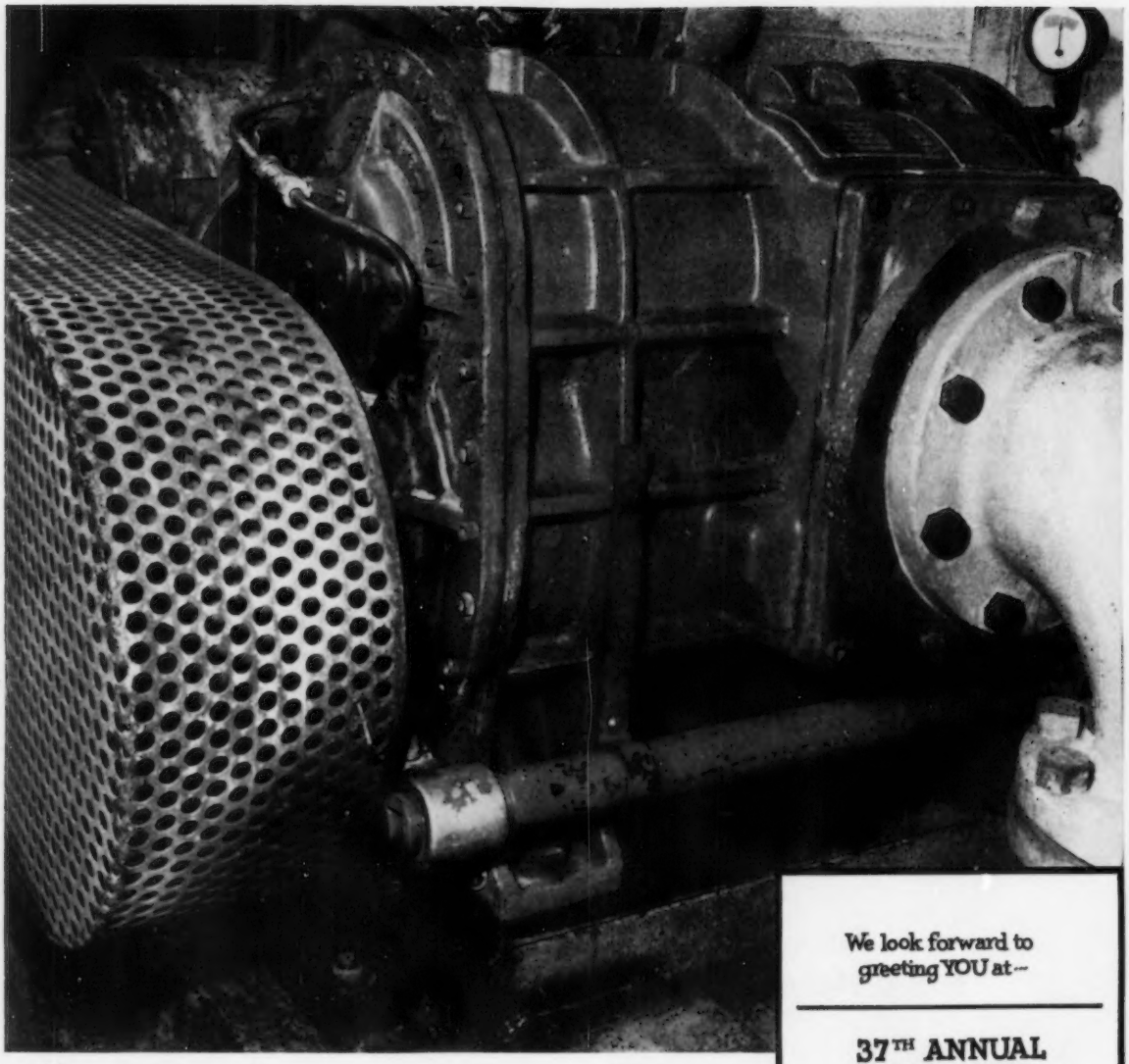
Like to eliminate costly shutdowns for repair or overhaul of processing equipment? End many corrosion problems? Stop pulp contamination? Look into the advantages of titanium for vital parts of the processing line.

Just for example, valves and fittings, screens, tubing, chemical recovery equipment, stacks and flues carrying corrosive gases, and beater room bar-sections may give many times usual service life when made of titanium. For titanium possesses outstanding resistance to most forms of corrosion. It's as strong as steel but only half as heavy, and may be fabricated by normal shop practices.

Until recently, titanium's remarkable properties restricted its use to defense production. But now expanded facilities at REM-CRU make ample quantities available for your use. You'll get *prompt* delivery of the sizes, shapes and grades you need. And, since there's a *best* way to use titanium—as with any metal—why not take advantage of the practical advice a REM-CRU engineer will be glad to give you?

To keep abreast of the latest developments on this vital metal, write to Dept. PT2 for the Rem-Cru Review—a free periodical presenting the latest technical data on titanium alloys.

REM-CRU TITANIUM REM-CRU TITANIUM, INC., MIDLAND, PENNSYLVANIA



Standardaire pump solves drying and foaming problems . . . cuts maintenance for specialty paper producer

Uneven drying and heavy foaming problems resulting from vacuum fluctuations presented serious obstacles to Raybestos-Manhattan, Inc., in the production of its new, single-fiber asbestos paper.

A Standardaire vacuum pump, installed originally on a 4-month trial basis, entirely eliminated these difficulties. The unit, requiring only half of the area of the former pump, provided a constant vacuum, making possible an uninterrupted flow between the pulp vat and the final windup drum.

Now, after nearly four years of operation, often in excess of rated capacity, this unit still is in prime condition. No maintenance has been required other than lubrication at 3-month intervals.

The compact Standardaire offers greater capacity per pound of pump, with less power consumption, than other units of equal size and weight. Find out how they can help solve your problems. Write for your copy of illustrated bulletin B-154 which provides specifications and operating data.

We look forward to greeting YOU at—

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AMERICAN
PULP and PAPER MILL
SUPERINTENDENTS
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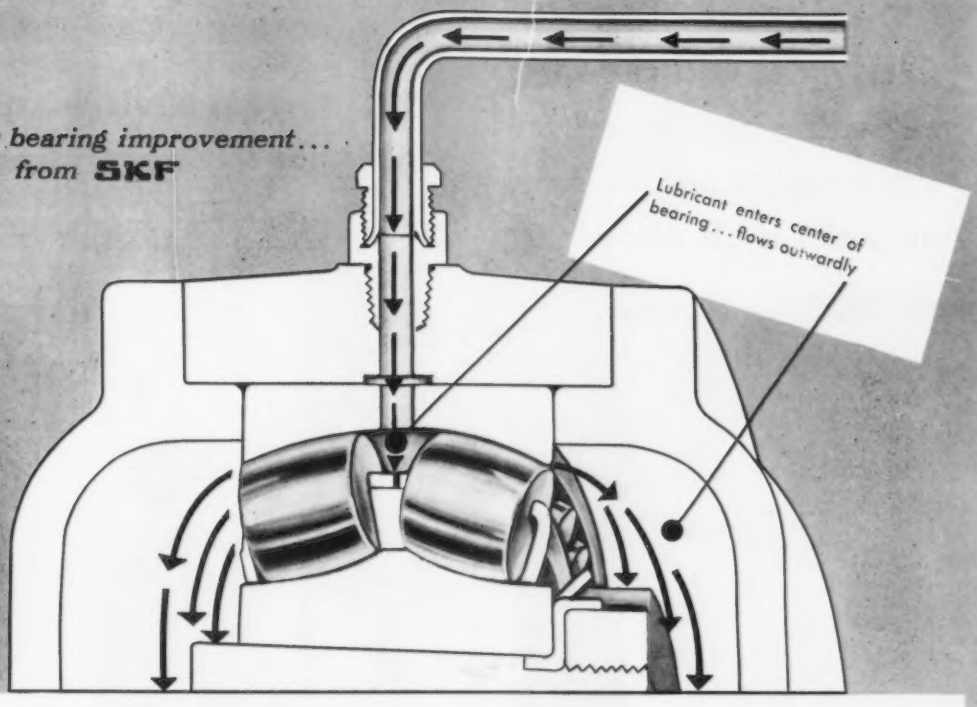
READ STANDARD
CORPORATION

BLOWER-STOKER DIVISION
370 Lexington Avenue
New York 17, New York

Another bearing improvement... from **SKF**



NOW AT NO EXTRA CHARGE-

SKF's improved method of lubricating large spherical roller bearings

To make the lubricant effective it should be located where needed—in the bearing. Also, new lubricant, when added, should enter where it does the most good—in the bearing.

For these reasons, all future production of SKF double row spherical roller bearings above 240 mm O.D. (9.4488") will be made with three equally spaced drilled holes in the center of the outer ring without any extra charge to our customers. *This permits the lubricant to enter the center of the bearing.*

With the lubricant (either grease or oil) being introduced into the center of the bearing, all working surfaces are quickly and completely covered. In addition, the outward flow flushes out the old lubricant, and with it, any abrasive dust, dirt, moisture or other impurities.

And where circulating oil lubrication is required, there is a continuous flushing and cooling of the bearing.

This is another example of how SKF helps you to obtain longer bearing life.

7711

Consult your SKF District Office today for complete information so that you can be the first to incorporate into your products this improved method of lubricating large spherical roller bearings.

SKF®

BALL AND ROLLER BEARINGS

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

—manufacturers of SKF *and* HESS-BRIGHT® *bearings.*

Clad steel will give us the same protection and long equipment life as solid high alloy!

. . . at savings up to 50% in material costs!

Clad steel demonstration unit recently featured at the Nat'l Assoc. of Corrosion Engineers show.

LOOK AT THE RECORD!

SEE FOR YOURSELF!

ECONOMY—high-alloy layer assures corrosion resistance, long equipment life.
STRUCTURAL STABILITY—low-cost backing steel provides strength and rigidity.
DESIGN FREEDOM integral bond allows design and fabrication of shapes to meet process and space needs.

■ Use of clad steel is growing fast throughout the paper industry—in digesters, head boxes, beater tubs, blow tanks and other vital equipment.

You'll find this true wherever abrasion and corrosion are problems. That's because clad steel offers the benefits of solid high alloy—*at savings in material costs up to 50%!* The permanent bond between cladding and backing simplifies construction — eliminates seepage and crevice corrosion.

Add to this, clad's easy maintenance —its smooth, hard surfaces won't chip or peel. Add easy modification—walls can be cut, flanges or pipes welded on quickly and easily, without injuring clad surface or bond!

And only Lukens offers a selection of 16 cladding and 11 backing metals—giving you practically an unlimited selection of cladding and backing combinations to meet any conceivable need.

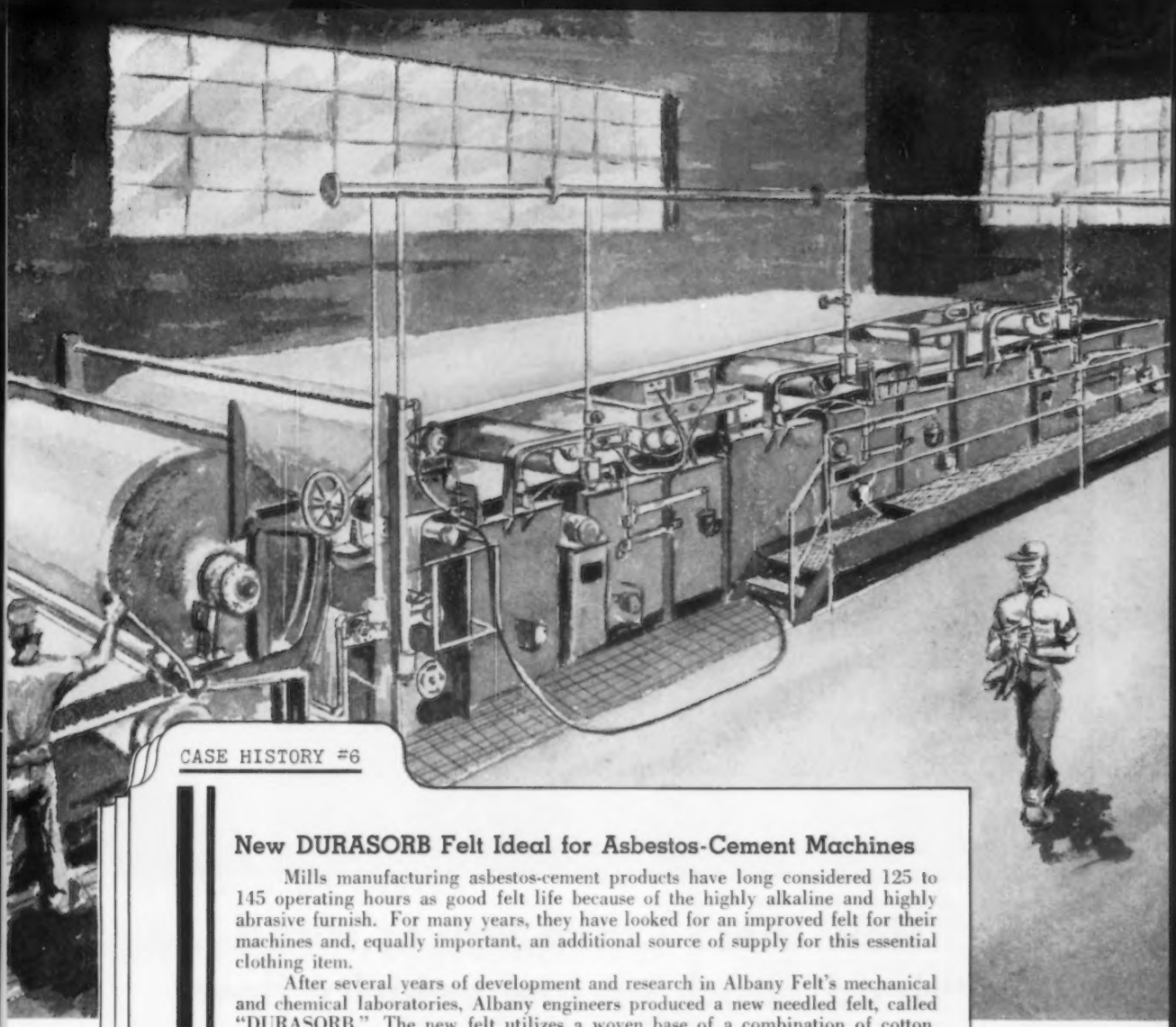
For more information consult your equipment builders or write to Manager, Marketing Service, Lukens Steel Company, 844 Lukens Building, Coatesville, Pennsylvania. We'll show you in detail just why we say clad steel is the ideal material for long range economy.

LUKENS CLAD STEELS

LUKENS

STAINLESS-CLAD ▪ NICKEL-CLAD ▪ INCONEL-CLAD ▪ MONEL-CLAD

Producers of the Widest Range of Types and Sizes of Clad Steel Plates and Heads Available Anywhere



CASE HISTORY #6

New DURASORB Felt Ideal for Asbestos-Cement Machines

Mills manufacturing asbestos-cement products have long considered 125 to 145 operating hours as good felt life because of the highly alkaline and highly abrasive furnish. For many years, they have looked for an improved felt for their machines and, equally important, an additional source of supply for this essential clothing item.

After several years of development and research in Albany Felt's mechanical and chemical laboratories, Albany engineers produced a new needled felt, called "DURASORB." The new felt utilizes a woven base of a combination of cotton, wool and synthetic yarns, plus surface fibers of wool and synthetics which are needled into the base by a special method developed by Albany Felt.

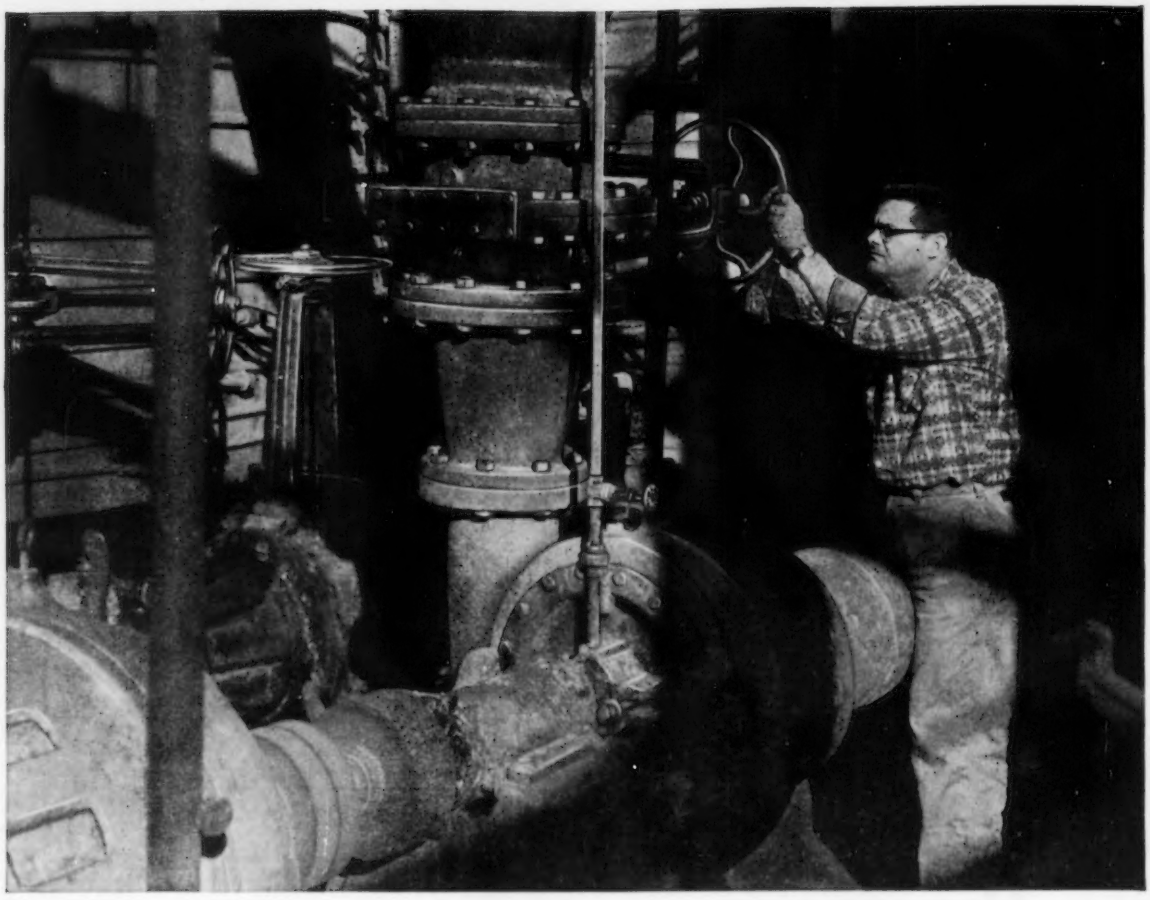
RESULTS: Trial runs of the new DURASORB felt on machines producing asbestos-cement board have shown increased life of 25 to 35% above average life of felts previously used. In addition, since Albany base fabrics are woven endless, the difficulty formerly encountered with joins or splices has been eliminated — Another example of trouble free performance meaning more production.

For improved felt performance on your machines, call in your Albany Felt Sales Engineer. His analysis of your problems, together with the efforts of the industry's top team of Service Engineers, Designers, Research and Laboratory Specialists, will bring you the famous "blue line" felts you need to help produce more *saleable tons per day!*

ALBANY FELT COMPANY

"THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS"

Main Office & Plant, Albany, N. Y. Other plants: Hoosick Falls N. Y., N. Monmouth, Me., St. Stephen, S. C., Cowansville, P.Q.



How these Crane Valves cured "dead" stock on low velocity flow

THE CASE HISTORY—During the past eight years, a large Southern paper mill has been using two makes of pulp stock valves. One is Crane—like the No. 1427 12-inch valve you see above, on lines to pumps handling high density stock between first and second stage bleaching.

Today, this mill is changing over to Crane valves exclusively as rapidly as possible—for two reasons. They were having trouble with "dead" stock built-up in low velocity flow lines and also with leakage caused by washing out of small accumulations of stock under valve discs.

Neither of these problems has occurred with Crane valves. With the Crane clog-proof shearing action against deep notches in the body, fibers *can't* accumulate under the disc. And Crane's unrestricted flow design, through full-port area, prevents pulp build-up or "dead" stock in lines.

Add Crane's quality materials and superior manufacturing methods—backed by over a century of skill—and you have basic reasons why case histories like this on Crane pulp stock valves are not uncommon at all.

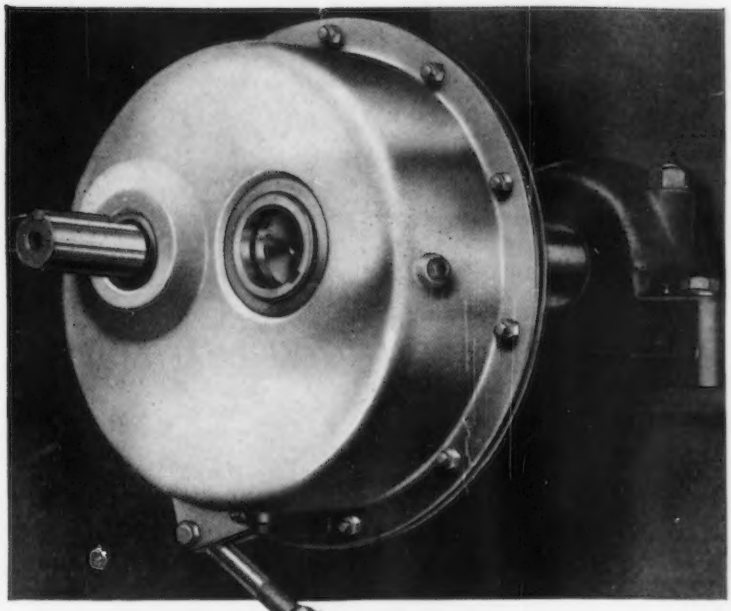
You can order Crane iron body pulp stock valves in sizes up to 24 inches, including rubber lined, with a variety of trims. And be sure to inquire about all-new, lightweight Crane stainless steel stock valves with short face-to-face dimension, for maximum resistance to corrosion.

Call your local Crane Representative for help in specifying and ordering, or write to address below.

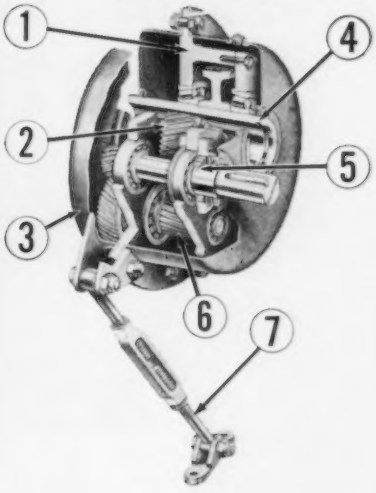
CRANE VALVES & FITTINGS

PIPE • KITCHENS • PLUMBING • HEATING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas



These famous FALK "In-built" factors *mean long life and dependability...*



SIX SIZES

- 1/2 to 30 hp
- Single or double reduction
- Wide output speed range—420 to 10 rpm

FALK

ALL-STEEL

Shaft Mounted Drives—

simple-compact-rugged-efficient

Created specifically for the vast number of applications demanding a sturdy and compact speed-reducing unit for direct mounting on the driven shaft, the new Falk all-steel Shaft Mounted Drive is built to give long service life at substantial savings of space, time, power and maintenance costs!

This efficient helical-gear drive, latest in the unmatched list of Falk precision-gearing achievements is an ingenious modification of the time-tested Falk Motoreducer design which has held, for more than 20 years, recognized leadership in this branch of highest-quality power transmission . . . It complements and completes the world-famous Falk line of reduction units covering the entire range of industrial applications.

Investigate the Falk all-steel Shaft Mounted Drive. Write to Department 247 for engineering bulletin, including selection and dimension details.

1 **All-steel Frame,** with more than double the rigidity of iron, supports all rotating elements.

2 **Precision Helical Gears,** designed and machined by Falk, rated to AGMA standards.

3 **Pressed Steel Housings,** whose sole function is to keep oil in, dirt out; easily removed for gear inspection without dismounting unit.

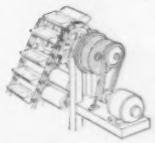
4 **Through Hollow Shaft** with counter bore provides for easiest installation or removal from driven machine shaft extensions.

5 **Backstop** can be furnished with the unit or added later for positive prevention of reverse rotation.

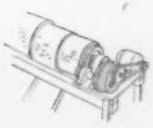
6 **Positive Lubrication,** continuous direct dip of revolving elements at all speeds.

7 **Tie Rod** and turnbuckle serve as anchor and facilitate V-belt or chain adjustment.

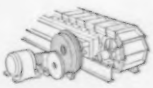
A FEW TYPICAL APPLICATIONS



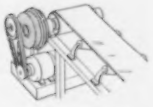
BUCKET ELEVATOR



SAND CLASSIFIER



APRON FEEDER



BELT CONVEYOR

THE FALK CORPORATION, Milwaukee 8, Wisconsin

MANUFACTURERS OF

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

FALK

. . . a good name in industry

Uniformity in your board starts with uniformity in our starch

When buying high quality paper board, your customers appreciate consistently uniform basic materials. Your best guarantee of a board with uniformity and durable printing surface from run to run is Eagle brand corn starch. In addition, you will be able to give your customers an improved finish and better surface that resists scuffing.

Eagle brand corn starch is an acid-converted starch known for its ease of cooking, high fluidity and low viscosity. Here is your answer to uniform quality board at competitive prices —the right way to repeat sales.

Ask the man from Corn Products, he can help with product information and engineering assistance. Whatever your paper-making problem, he will be able to supply you with the technical assistance you require.

Eagle®
BRAND
CORN STARCH

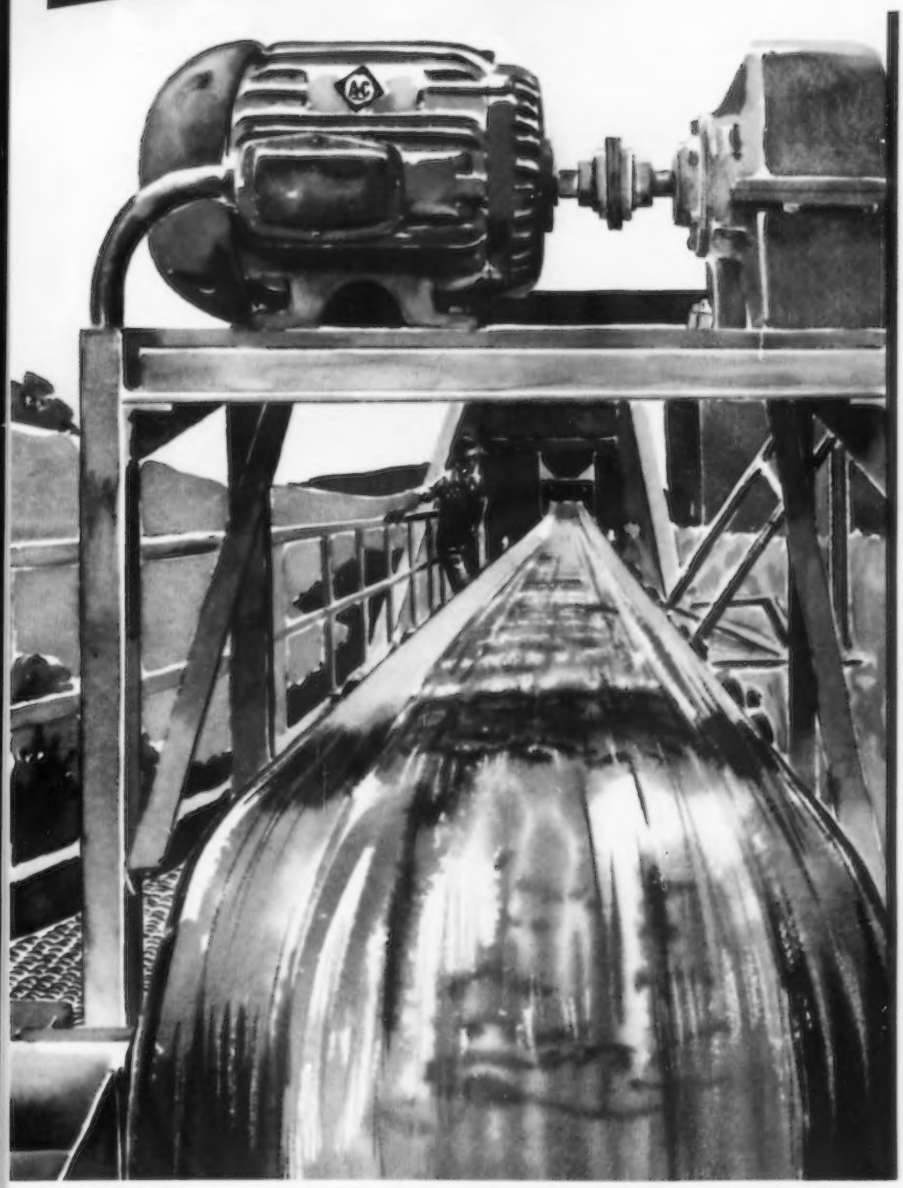
1906 • **50th ANNIVERSARY** • 1956
CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York 4, N. Y.

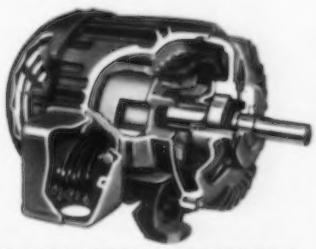
Corn Products makes these famous brands of starches and gums for the paper industry:
HERCULES · GLOBE · EAGLE · FOXHEAD · AMIJEL · CORAGUM · TEN-O-FILM · CLARO STARCHES
EXCELLO AND GLOBE DEXTRINES · LAM-O-DEX GUMS

There's MORE

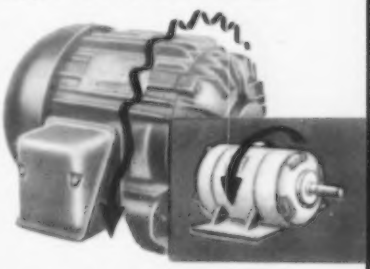
'Round-the-Calendar Operation

with Allis-Chalmers MOTORS





MORE IRON AND COPPER provide double protection against costly breakdowns. Liberal use of cast iron protects against frame distortion, and greater amount of copper increases electrical life.



MORE COOLING SURFACE of Allis-Chalmers deep-rib motors makes insulation burnouts highly improbable under normal conditions. There are no external enclosed air passages to become clogged.

A NATIONAL NETWORK of Allis-Chalmers Motor Distributors is on the job day and night... ready to provide the fast service needed to keep your plant operating 'round-the-calendar.

As a new machinery component or as replacement, specify Allis-Chalmers motors. To find out more, contact your nearby Allis-Chalmers district office, your A-C distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

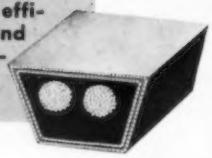
A-4906

TEXROPE
Greatest Name in V-Belt Drive

The Only Complete Line of Variable Speed V-Belt Drives

Texrope Fixed-Speed Drives

For transmitting power efficiently between motor and load where speed variation is not required.



Texrope Grommet Belts

This heavy-duty construction gives from 30% to 50% longer life at no extra cost. The grommet is endless, eliminating the stiff overlap that sets up strains and causes eventual breakdown in ordinary belts. Oil-resisting and static-conducting belts also are available.

Magic-Grip Sheaves

Designed for fast, easy mounting and dismounting. You simply slip the assembled unit on the shaft, slide it to the desired position and tighten the screws which clamp the split tapered bushing on the shaft. The result is safe, smooth-running performance.

Stationary Control *Vari-Pitch* Sheave

where speed changes are infrequent and machine can be stopped to make the change.

9% to 38% Speed Variation

One *Vari-Pitch* sheave and one fixed-diameter sheave are used to get this speed variation. Here's the low-cost way of providing variable speed. No need for high-cost special motors or electrical control. Takes only a few minutes to alter pitch diameter to change speeds.

To 196% Speed Variation

Two *Vari-Pitch* sheaves — one on the driver shaft and one on the driven shaft — can greatly increase the range of speed variation. *Vari-Pitch* sheaves provide long-lasting, dependable performance, plus accurate speed control.

Motion Control *Vari-Pitch* Sheave

for applications where frequent changes must be made while drive is in motion.

Single motion-control type for speed variations to 38%. Simply turning a handwheel provides positive speed change using motion-control *Vari-Pitch* sheaves. Handwheel actuates adjusting mechanism to change sheave pitch diameter and adjust belt tension by moving motor base.

Double motion-control type for speed variations to 196%. Motion-control *Vari-Pitch* sheaves can be used on both driven and driver shafts. In this case changes in pitch diameter of motor sheave are offset by an opposite change in the driven sheave — thus maintaining constant belt tension.

A-C ALLIS-CHALMERS

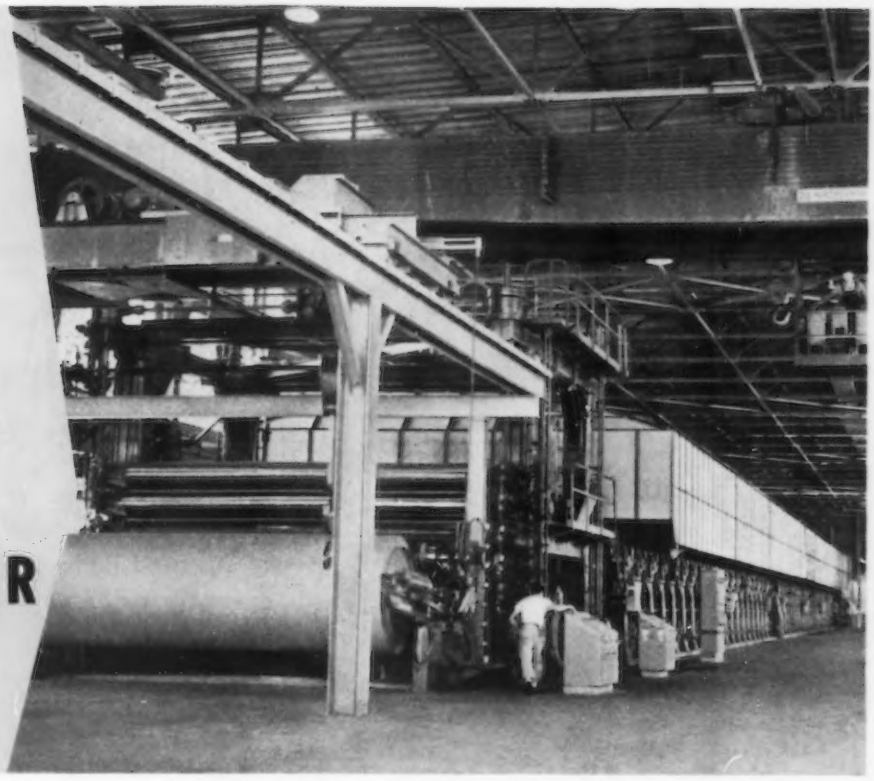
Texrope, Magic-Grip and Vari-Pitch are Allis-Chalmers trademarks.

For further information ask your Allis-Chalmers Distributor or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin

ALLIS-CHALMERS

A-4845

NEW ROME MILL USES FARREL® CALENDER ROLLS



. . . *the paper industry's number one choice*

The new mill of Rome Kraft Co., near Rome, Georgia, was designed for an output of 650 tons daily. Now averaging far above rated capacity, it could well achieve an output of 1000 tons daily.

The twin calender stacks following the 252" paper machine in this new mill are equipped with Farrel rolls. Each stack has one 36-inch king roll and six intermediate 18-inch rolls.

To find Farrel rolls in these calenders is not unexpected, since *more calenders are equipped with Farrel rolls than all other makes combined.*

One reason for this preference is that Farrel rolls have the ideal combination of metal formula and depth of chill for maximum service life. The chill is sufficiently deep to resist crushing and abrasion; the body strong enough to carry the load.

Accuracy is another reason. Farrel rolls can be ground to tolerances within .00025" of perfect roundness and straightness, where such accuracy is required. Rolls requiring crown are made with a mathematically graduated curve, symmetrical on both halves of the roll.

For more about Farrel rolls, ask for Bulletin 116. Write today.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONNECTICUT

Plants: Ansonia and Derby, Conn., Buffalo and Rochester, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Akron, Chicago, Fayetteville (N. C.), Los Angeles, Houston.

MORE CALENDERS ARE EQUIPPED WITH FARREL ROLLS THAN ALL OTHER MAKES COMBINED

Farrel-Birmingham®

FB-1068

FARREL PAPER MILL MACHINERY — Rolls: Chilled Iron, Dry Sand, Meehanite®, Alloy Iron, Steel, Chromium-Plated • TYPES OF ROLLS: Calender Stack, Board Calender, Super Calender, Glassine Calender, Friction, Breaker, Smoothing, Coating, Creping, Gumming, Paraffining and Waxing, Saturating, Miscellaneous Special Purpose • CALENDERS: Paper and Board • GRINDING MACHINES: Roll • CALIPERS: Roll • GEARS, CUT: Spur, Helical and Herringbone • SPEED REDUCING GEAR UNITS • SPEED INCREASING GEAR UNITS • FLEXIBLE COUPLINGS

One of a series showing how Stowe-Woodward's better quality control results in better papermaking rolls.

Splitting the Bale at Dockside

to make BETTER RUBBER COVERED ROLLS

What pure alpha is to paper, 1X rubber is to papermaking rolls. So scarce is the supply of this high grade rubber that less than 2/10 of 1% of the world production can meet the specifications of Stowe-Woodward's dockside inspector who checks every shipment. This premium grade rubber is cleaner, stronger, and chemically purer. It is the starting point for the production of the highest quality rolls — rolls made by Stowe-Woodward to boost paper production for you.

"RUBBER ROLLS with a REPUTATION"

S-W INC.

STOWE-WOODWARD, Inc.

Craftsmen in rubber rolls

NEENAH, WISCONSIN • NEWTON 64, MASS. • GRIFFIN, GEORGIA

Mergers Threatened By Bill

An end to the merger trend in the paper and board industry is not unlikely if the bill recently introduced by Senator Hubert H. Humphrey (D., Minn.) is passed in this or the next session. The measure, designed to strengthen present anti-trust legislation, would hold policy making company officials criminally liable in cases adjudged in violation of antitrust law. Punitive action would include the enjoinder of executives from serving their organization or a competitor's, permanently, or for a specific period of not less than ninety days, with total forfeiture of pay.

Wider Newsprint Machines?

Is an upward surge in newsprint machine widths indicated by Great Lakes' order for a 324-in. trim (wire 340) unit? Early twenties thought was divided between narrow but fast, and wide but slower types. Wide machines eventually gained favor as they could be speeded up, whereas it was impractical to widen narrow models. Wire widths grew until the late 1920's, when Great Lakes installed a 305-in. machine. Since then trim widths settled to a 225-270 range, as excessive operating and maintenance problems were thought to exist in very wide units. Now Great Lakes, most experienced in large widths, has ordered an even wider machine.

Paper Firms Feel College Pinch Too

An indication that the paper industry is not receiving its share of college graduates was evidenced during the week, when the CBS-TV "Omnibus" show's co-sponsor, Scott Paper Co., turned its $20,000 two minute commercial allotment into a bid for college talent. Engineers, scientists, business and liberal arts graduates were invited by the firm to consider a "paper future", and especially with Scott.

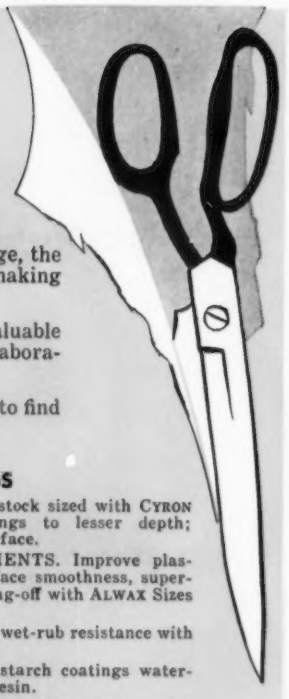
Quebec Reverses Trend

The new market pulp mill announced in this issue for Thurso, Que., is of particular significance since it marks the first important new mill construction in that province since before World War II. Although this province is the largest Canadian producer of pulp and paper, a conservative attitude on the part of existing Canadian companies and the Quebec government (which controls most of the available timber) has held back new mill expansion there. It is interesting to note that the company is a new one, and that one of the principals already has timber limits in the area of the new mill.

No Newsprint Relief

The House newsprint committee reported this week that it saw nothing in the near future to indicate U.S. newspapers would be assured enough newsprint to meet their desires. Obviously, this condition will continue so long as newspaper consumption continues to outrace mill additions to capacity. At the same time, publishers are not helping themselves by raising unreasonable disturbances about price adjustments, which tend to scare off venture capital for new mill expansion.

Here's where to look for help on Papermaking Problems!



If you're looking for answers to any of the papermaking problems listed on this page, the best place to find them is at Cyanamid where we handle the broadest line of papermaking chemicals in the industry.

Our Technical Service Staff, trained in every phase of papermaking, can be of valuable help. If they can't give you an immediate answer to your problem, our Research Laboratory or Application Laboratory is available for assistance.

Just run down the list below, and tick off your problems—we'll make it our problem to find the right answer for you.

SIZING

( ) BRIGHTNESS. Where color is important, Cyanamid offers the lightest grades available anywhere in ACCOBRITE® Rosin Size (X, WG).

( ) COLOR STABILITY. ACCOBRITE shows less degradation on aging than other sizes.

( ) DUSTING. Use low-dusting ACCOBRITE dry, or use liquid sizes (save on handling, too).

( ) COST. There's economy in CYFOR® Fortified Rosin Size (35-45% less required); or in unbleached grades use FF and Dark Wood Rosin Sizes.

( ) FOAM. Use non-foaming ACCOBRITE (zero foam index), low-foaming CYFOR or FF Sizes. Or check foam with CYNOL® Defoamers.

( ) HIGH SIZE SPECS. Boost hard size specifications with CYFOR Fortified Rosin Size (lower cost, too).

( ) ACID AND ALKALI RESISTANCE. Especially effective beater additive is CYRON® Size (needs no alum, rosin or wax). Surface size with CYRON and starch for high ink and lactic acid resistance.

( ) WATER, LACTIC ACID. 25 grades ALWAX® and WAXINE* Sizes to improve resistance to water, writing or printing inks, varnishes and lactic acid. AEROSIZE® Sizes (high free rosin) boost water resistance.

( ) FINE PAPER SIZING. When sizing fine papers use iron-free Alum for highest brightness. Improve surface with CYRON, ALWAX or WAXINE. Reduce pick and curl with PAREZ® 607 Resin.

CYANAMID

AMERICAN CYANAMID COMPANY
PAPER CHEMICALS DEPARTMENT
30 Rockefeller Plaza, New York 20, N. Y.

Please have your Technical Representative call on the problems checked above.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

In Canada: North American Cyanamid Limited, Toronto and Montreal

COATINGS

( ) RAW STOCK. Coating raw stock sized with CYRON takes more uniform coatings to lesser depth; smoother, better printing surface.

( ) CLAY AND OTHER PIGMENTS. Improve plasticity, water resistance, surface smoothness, supercalendering and reduce dusting-off with ALWAX Sizes in clay-pigment coatings.

( ) PROTEIN-PIGMENT. Raise wet-rub resistance with PAREZ 613 Resin.

( ) STARCH COATING. Make starch coatings waterproof by adding PAREZ 608 Resin.

( ) STARCH PIGMENT. Coatings take on higher wet-rub resistance when treated with PAREZ 608 or 612.

( ) COATING ADHESIVES. Control viscosity and fluidify adhesives with AZITE® 900 Liquefier. Also use AZITE to preserve paper strength.

WET STRENGTH AND OTHERS

( ) WET STRENGTH. Highest wet strength, developed right off the reel, is imparted by PAREZ 607 Resin, a MELOSTRENGTH® Resin. Lower degrees of wet strength secured with urea-formaldehyde resins.

( ) COLOR RETENTION. Better dispersion of pigments and fillers, and better retention of color, secured with ACCOCEL® 741 Dispersant.

( ) LINTING. Linting of wiping papers, towels, tissues and napkins is reduced by use of PAREZ 607 Resin.

( ) ABSORBENCY. Improve water-absorbency of toweling, napkins, or tissues with CYNOL Rewetting Agents – surface or slush-stock application.

( ) PICK. Reduce pick in printing papers by treating with PAREZ 607 Resin.

( ) CURL. Curl in paper can be effectively controlled by addition of ALWAX or WAXINE Sizes or PAREZ 607 Resin.

( ) SOFTNESS. Permanent softness of tissue, absorbent papers imparted by CYNOL Softening Agents.

( ) BROKE. We have a lot of experience with wet-strength broke recovery that can be applied to problems you may encounter.

( ) CHEMICAL HANDLING. Use of liquid Alum and rosin size will simplify mill handling and may greatly reduce chemical costs.

( ) PITCH. Disperse with ACCOCEL® 741 Dispersant. Also effective in dispersion of ink, asphalt and other foreign matter.

( ) FILLER, FIBER RETENTION. Good retention of filler and fiber is promoted by the use of Sodium Phospho Aluminate.

*Trade-mark
®Registered trade-mark

you name it

We can't begin to cover all the possible problems in this space. If you have any special ones not mentioned that we can help with, note them here.

( ) _____

_____

_____

I. P. Builds Big New Mill In Arkansas

International Paper Co. has jelled plans for immediate construction of a $57 million newsprint and bleached kraft board mill at Pine Bluff, Ark. (also site of Dierks Forest's new kraft mill, now going up.) The new plant slated to be completed by the end of 1957, will be I.P.'s second newsprint operation in the South. The new $20 million newsprint project at the Mobile mill gets into production this September.

Pine Bluff production will be at an annual rate of 130,000 tons of newsprint and 165,000 of bleached food board. Output of kraft board is expected to begin in the third quarter of 1957, followed shortly afterward by start of newsprint operations.

All the financing of the Pine Bluff project will come from within the company, it was said. Preparing for an adequate pulpwood supply, I. P. agreed earlier this year to pay Olin Mathieson $33 million for 395,000 acres of woodlands in Arkansas, Louisiana, and Texas.

New Market Kraft Mill for Quebec

A new bleached kraft market pulp mill was announced this week for Thurso, Que. Singer Mfg. Co. and Perkins-Goodwin Co. have jointly formed a Canadian corporation, Thurso Pulp & Paper Co. to manufacture and sell bleached kraft pulp. The new company is owned 70 per cent by Singer and 30 per cent by Perkins-Goodwin. The mill has a capacity of 200 tons per day and the cost, it is reported, will be $16 million.

Thurso, the site of the new mill, is on the Ottawa River approximately halfway between Montreal and Ottawa and near Buckingham, site of the large newsprint mill of James MacLaren Co. Singer has a sawmill and veneer plant at Thurso for its sewing machine cabinets backed up by 500,000 acres of wood limits. This, plus waste from the woodworking operations, will supply the raw material for the pulp mill.

Officers of the new company are: Paul Bourget (at present works manager of the Singer plant at Thurso), president; L. Hird (Singer), vice-president and treasurer; Hazen Hansard (Montreal lawyer), secretary. Other directors are: S. G. Blankenship (Perkins-Goodwin), vice president; Louis Calder, Jr., (Perkins-Goodwin) and Donald Kircher (Singer).

This will be the first new market pulp mill to be built in the Province of Quebec in more than 25 years and the first new pulp or paper mill of appreciable size to be built there in 20 years. This lack of new major construction is all the more remarkable in that Quebec has been for years the largest pulp and paper producing province in Canada.

New Cylinder Board Mill Planned for Newark, Calif.

American Forest Products Corp. plans to build a $1,500,000 paperboard mill in Newark, Calif., which is in the Eastbay area south of Oakland.

Plans to construct the plant adjacent to the company's paper box manufacturing plant have been submitted to the Newark City Council for approval.

Construction of the new plant is expected to get underway July 1 and is to be completed and in operation early next year.

The mill will operate on waste paper and produce corrugating medium. Plant capacity has been set at fifty tons of paper daily.

The company will employ between thirty and thirty five workers at the start of operation. L. J. Meunier will be general manager.

Disagrees With Senators On Long-Bell Merger

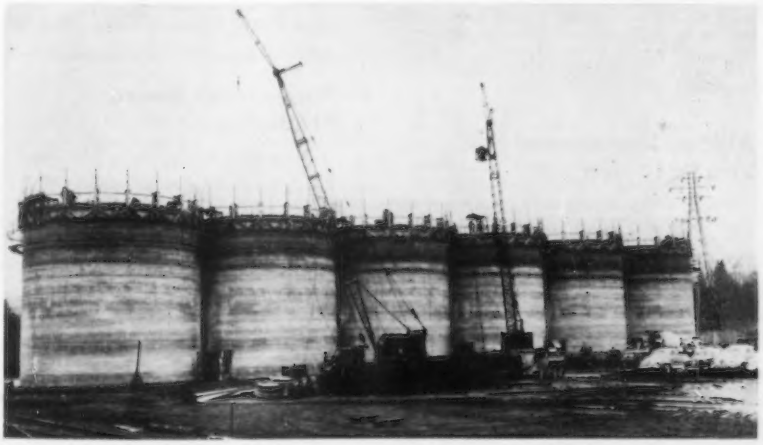
The Portland, Ore. Chamber of Commerce, alarmed by the attack being made by Oregon's two Senators on the proposed amalgamation of Long-Bell Lumber Co. and International Paper Co. is leading a drive to prevail upon the Senators to halt their opposition in the interest of bringing substantial new industry to Oregon.

David C. Duncan, Chamber president, has written both Senators that the proposed merger has no elements of monopoly involved and that it will bring about establishment of a much-needed paper mill in Oregon.

President Duncan's letter concludes: "Already other industrial prospects have shown concern that you would challenge the entry of International into Oregon on monopoly grounds."

Union Bag's Newsprint Plans Forthcoming Soon

On the eve of International Paper Co.'s announcement of a new southern newsprint mill, the *Wall Street Journal* reports: Alexander Calder, chairman of the board of Union Bag & Paper Corp., has told the stockholders' annual meeting that he "guessed" his company would make an announcement concerning the acquisition or construction of a new newsprint mill in the South "within six months."



CHIPS FOR SULPHITE—Chips for new Cosmopolis sulphite mill will be stored in these six concrete silos, each measuring 80 feet high x 44 feet in diameter. Weyerhaeuser Timber Co., who is building the mill at Cosmopolis, Wash., expects that each silo will hold enough hemlock chips for a day's operation of the 400-ton bleached sulphite pulp mill. Start-up is scheduled for early 1957.

Pabco Products Plans Expansion; Changes Company's Name

Pabco Products, Inc., and its now wholly-owned subsidiary, Fibreboard Products, Inc., in a combined statement of earnings and report of condition, recently declared that the company is in a position to finance a major expansion program of manufacturing facilities during the next five years. While there is much detailed planning still to be done on this program, the emphasis will undoubtedly be in paper board manufacturing and converting facilities, and, as to building materials, in gypsum products, it was said.

Pabco stockholders also voted on April 12 a change of the company's name to Fibreboard Paper Products Corp. It was felt that since 75% of the combined sales and an even larger percentage of the combined profits are from the sale of paperboard products, the name Pabco Products Inc. is no longer truly descriptive. However, in order to retain the good will associated with the Pabco name in the building materials and hard-surface floor covering fields, the Pabco trademark will continue to be used in connection with these products.

More About World's Widest Machine

The Great Lakes Paper Co., Ltd., Fort William, Ont. is installing a 340-inch fourdrinier newsprint machine which will break all prior world records for size. Contract for construction of the machine has been awarded to the Bagley & Sewall Div. of Black-Clawson Co.

Delivery of the machine will be made to the Fort William mill early in 1958 and it is expected that it will have been set up and ready for operation about July 1 of that year.

It will have an estimated over-all length of 384 feet.

The machine will trim 324 inches.

Great Lakes Paper Co. is at present operating the world's widest newsprint machine with a trim of 305 inches.

This will be not only the world's largest newsprint machine, but the largest paper machine of any kind. The present largest machine is at Lloyd's mill in England.

Unprecedented Mill Move

Sidney Roofing & Paper Co. Ltd., Victoria, B.C., is moving its entire operations from Victoria on Vancouver Island to Burnaby near the city of Vancouver on the mainland.

The company operates a groundwood pulp mill, three cylinder machines and a felt saturating plant at Victoria. The move will be done in stages from now to mid 1959.

Alpena Hardboard Mill Starts to Go Up

Some 650 construction workers are just beginning work on the new hardboard mill of the Abitibi Co. at Alpena, Mich. Date for the start-up of the operation is now into 1957.

St. Marys' New Board Machine Gets Rolling

Bleached kraft linerboard and food container board is now in regular production on the recently-installed 216-inch fourdrinier board machine of St. Marys Kraft Corp., St. Marys, Ga. It is the second machine for this mill.

N.S. Men Come to Chester

A group of Nova Scotian officials arrived last week in Chester, Pa. to confer with executives of Scott Paper Co. over the proposed $35 million pulp and paper and converted Scott products mill that the company may build in N.S.

Among the visiting Canadians was the Lands & Forest Minister, Colin Chisholm.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending March 31, 1956, was 101.9 percent. compared with 103.9 percent, revised, for the preceding week. The ratio was 98.1 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending March 31, 1956, was 101 percent, compared with 98 per cent for the preceding week and 95 percent for the corresponding week last year.

(Detailed statistics on page 68.)

More About Saskatoon's Mill

Dear Sir:

Further to your item of March 26th, 1956 on the proposed fibreboard mill in Saskatoon, Saskatchewan, we would like to provide the following information:

Allied Securities Ltd. of Saskatoon, Saskatchewan are planning a fibreboard mill which is to have a capacity of 20 million sq. ft. and 12 million sq. ft. of insulating hard board respectively. Future expansion will double this capacity. This mill will be unique in Canada as it will be the first mill designed to utilize wheat straw as the basic raw material. Saskatchewan being Canada's foremost wheat producing province and Saskatoon being located in almost the middle of this production area, it has been estimated that there is over three times the basic raw material need available within a twenty mile radius. The availability of natural gas so near its source also helps make this mill a very attractive proposition. Preliminary planning is presently well underway, the required mill property has been leased within the Saskatoon industrial area and it is expected that construction will get underway this summer.

Stadler, Hurter & Co., Consulting Engineers of Montreal, have been retained for this development.

M. A. Campbell
Section Leader
Stadler, Hurter & Co.

Oxford Appoints Stora Pulp Agent

Oxford Paper Co., Rumford, Maine, has appointed Stora Kopparberg Corp., 230 Park Ave., New York City, as their sole sales agent for Oxford bleached and unbleached hardwood sulphate pulp.

C-Z Doubles Camas Recovery Boiler Facilities

Plans for installation of a two million dollar kraft recovevry furnace at Crown Zellerbach Corp.'s Camas, Wash., mill have been announced by G. H. Gallaway, resident manager. The furnace will be in operation by early 1957.

The new unit, the third of its kind at Camas, will have a daily capacity for handling the spent liquor from 350 tons of kraft pulp. This will double the Camas mill's present facilities.

Dryer Felt Catches Fire At Howard's Maxwell Div.

A 95-yard cotton dryer felt caught fire last week and burned completely on the 153" fourdrinier paper machine of the Maxwell Paper Co. Division of Howard Paper Mills Inc., Franklin, Ohio. The mill estimates the total damage represents a loss of $10,000.

It was reported that the fire started in "a heater beneath the machine." This is the first fire in the Maxwell Div. mill in three years.

Carter, Rice Combines With Storrs & Bement

As of April 2, the operations of Carter, Rice & Co., Corp. and Storrs & Bement Co. were combined under the name of Carter Rice Storrs & Bement Inc.

The new firm calls attention to the absence of commas, hyphens, etc. This is deliberate and name should appear as above.

This change affects the combined operations of both companies in Boston and their various branches in Augusta, Worcester, Springfield, Pawtucket, New Haven, East Hartford, as well as the Carter, Rice & Co. Corp. office in New York City.

New Officers of Western Dist. Empire State TAPPI

The Western District of the Empire State Section of TAPPI held their annual election of officers at their last meeting at the Prospect House, Niagara Falls, N. Y. on April 4. Officers elected were:

Chairman — Robert H. Zinsmeister, Kimberly-Clark Corp. Niagara Falls, N. Y.; Vice Chairman — E. F. Andrews, International Paper Co., Niagara Falls, N. Y.; Treasurer — H. E. Lindberg, Robert Gair Co., North Tonawanda, N. Y. and Secretary — Harry B. Hulse, The Upson Co., Lockport, N. Y.

Committee Chairmen and vice-chairment elected were: Program Committee — Chairmen: Ward I. Arnold, International Paper Co., North Tonawanda, N.Y., and Charles H. Kremers, Kimberly-Clark Corp. Niagara Falls, N. Y. Vice-Chairmen: Charles W. Raleigh, Buffalo Electrochemical Co., Buffalo, N. Y., and Robert A. Hoffman, National Aniline Division Allied Chemical and Dye Corp., Buffalo, N. Y. Publicity Committee—Chairman: Oscar E. Anderson, Jr., International Paper Co., Niagara Falls, N. Y. Attendance Committee — Chairman: Donald Hagerla, Kimberly-Clark Corp., Niagara Falls, N. Y.

Membership Committee — Chairman: Gordon K. Storin, Hooker Electrochemical Co., Niagara Falls, N. Y. Vice-Chairman: George E. Norton, Irish Paper Co., Niagara Falls, N. Y.

A Difference of Opinion

Dear Sir:

In your February 13 issue you reprinted excerpts from an editorial by President Paul L. Phillips of the International Brotherhood of Paper Makers entitled "How Ridiculous Can We Get?," with comments of your own. When I first read President Phillips' article in "The Paper Maker," I felt that his remarks were subject to considerable misunderstanding, and your own editorial comments confirm this fear.

The original article and your comments suggest that jurisdictional disputes between the International Brotherhood of Pulp, Sulphite and Paper Mill Workers and International Brotherhood of Paper Makers have plagued and harassed the pulp and paper industry. This is just not true.

Your readers are probably unaware that relations between these two unions have been regulated satisfactorily for 45 years by an agreement drawn up in 1909. That agreement was written and ratified after three years of bitter internecine struggle between the two unions. The agreement was set up not only to draw some jurisdictional lines, but more important to provide for the amicable settlement of all disputes between the two organizations.

The agreement has worked admirably. I cannot recall a single interruption of work resulting from the inability of the two unions to agree on "jurisdictional" matters. Therefore, I was astonished to read in your comments:

"Paper Trade Journal has been an outspoken critic on the subject of plant jurisdictional problems, and has often found itself at odds with the union viewpoint. Here we would like to commend Mr. Phillips for his forward thinking, and at the same time to express the hope that the industry will not have to wait quite as long as the company discussed above to have these problems ironed out. With union merger an accomplished fact, there is no reason why these disputes cannot be eliminated entirely."

A reader would conclude that jurisdictional problems between our two unions have plagued the industry. They have not. There have been disputes involving other unions, but every dispute between our organizations has been settled without the loss of any time.

The accomplishment is particularly impressive because the 45-year period has been one of rapid technological change. No agreement assigning jurisdiction over specific jobs can ever by itself be a final answer. Every technological change produces changes in job duties, and the number of these changes in pulp and paper has been legion. The remarkable record of peace between these two unions has resulted not from any specific allocation of jobs, but from a firm determination on both sides not to let differences over jobs interfere either with the amicable relations between the two unions or with the regular operation of pulp and paper mills. As each new problem has arisen, the unions have accommodated themselves to it. In part this has been accomplished by one union's "waiving its jurisdiction." Thus there are mills where the Paper Makers represent pulp mill or converting employees, and others in which the Pulp, Sulphite and Paper Mill Workers represent the men on the paper machines and in the beater rooms. This kind of mutual accommodation, rare in the history of industrial relations, is one of the glories of the pulp and paper industry. The industry ought to count its blessings.

George W. Brooks, Director,
Dept. of Research and Education
International Brotherhood of Pulp, Sulphite and Paper Mill Workers

We do not think that the original article and our comments would be considered by our readers as indicating that jurisdictional disputes between the Papermakers and Sulphite Workers have been a major problem. President Phillips of the Paper Makers admits that it has been a problem in some cases and we admire his honesty in saying so and giving us permission to reprint his remarks. Our editorial comments were directed at the over-all problem of jurisdictional troubles as indicated by our reference to the A.F. of L.-C.I.O. merger. Mr. Brooks says "your readers are probably unaware . . . . ." Since the large majority of our readers are employed in the paper industry they are quite aware of the extent and nature of our labor jurisdictional problems.

Although we pointed out the above in correspondence with Mr. Brooks, he still declines to see the problem except as related to his own backyard and wishes that we hadn't printed anything indicating that all is not a perfect bed of roses there. — Ed.

PAPER PEOPLE

G. A. Day

D. H. McMurtrie

P. M. Goodloe

R. G. Hoos

Brown Co. Promotes Four on Technical Staff

Dr. George A. Day, who since 1944 has been serving as director of research, has been appointed to the newly created position of technical director of Brown Co., Berlin, N.H. He will be in charge of all technical affairs of the company, including direction of new developments and guidance of the Research Department and Quality and Process Control Department.

Three other promotions have been made in Brown Co.'s technical staff. Dr. Paul M. Goodloe, director of quality and process control, will also serve as assistant technical director for the company. Douglas H. McMurtrie, who has been research associate in pulp, becomes director of research. B. G. Hoos, who has been assistant to Mr. McMurtrie, is promoted to research associate in pulp.

Three C-Z Men in New Jobs

L. R. Mullineaux, general supervisor of steam power maintenance and operations at Crown Zellerbach Corp.'s Camas, Wash. mill has been moved to steam power superintendent at the new Antioch division in California.

Morris R. Rivers, assistant general supervisor for Camas steam power maintenance and operations takes over Mr. Mullineaux's former job as general supervisor.

At the St. Helens Pulp & Paper Co., division, C-Z, St. Helens, Ore., Ramon A. Nelson has been hired as new assistant personnel supervisor. Mr. Nelson was previously in charge of personnel and industrial relations for a southern California engineering company. He joined the division early in April.

Directs Traffic at Hamilton

John K. Truitt, traffic manager of the Champion Paper Co., Hamilton, Ohio for the last ten years, has been named director of traffic. He succeeds Harry T. Ratliff, who has been named honorary director of traffic for Champion.

Mr. Truitt is widely known in the traffic field as a member of a number of professional organizations, including the American Society of Traffic and Transportation and the National Freight Traffic Assn.

Union Bag Promotes Taylor, Lientz, and Kimble

Malcolm L. Taylor, manager of the technical division of the Savannah Plant of Union Bag & Paper Corp., has been promoted to the position of technical director of the company, with offices in New York City, effective May 1, the news comes from T. T. Dunn, executive vice president in charge of manufacturing.

Also J. R. Lientz, as previously reported by *Paper Trade* JOURNAL, has assumed the position of resident manager of the Savannah Plant, assuming the duties of Mr. Dunn, who in his new capacity as executive vice-president is moving his offices to New York City.

In other advancements G. C. Kimble, assistant manager of the technical division, succeeds Mr. Taylor as manager, and W. C. Chapman, superintendent of mill technical becomes the assistant manager of the technical division. R. R. Chase, assistant superintendent mill technical has been promoted to superintendent of mill technical, and Horace Robson, group leader in mill technical, replaces Mr. Chase.

While serving as functional director of all technical work in the company, Mr. Taylor will also serve as an assistant to Mr. Dunn, and will work closely with the various sales departments and sales development regarding technical matters affecting the company's operation. His new assignment also includes serving with the Future Planning Committee which is headed by W. D. Cole.

Mr. Kimble, new technical division head, has been with Union Bag since 1948, coming with the plant as superintendent of the mill technical department. Prior to joining Union Bag, he was on the technical staff of the Minnesota and Ontario Paper Co.

Williams Succeeds Taylor At Weston Paper & Mfg. Co.

Weston Paper & Manufacturing Co., with general offices in Dayton, Ohio, and mills in St. Mary's, Ohio and Terre Haute, Ind., has retired purchasing director, C. C. Taylor, who has been with the company in a consulting capacity.

Mr. Taylor's duties have been assumed by William G. Williams, Jr., who will be located in Dayton.

To Represent Rayonier In Japan

Dean J. Kutchera of Rayonier sales department leaves tomorrow for Osaka, Japan to become assistant Far East representative for the pulp producer, it was announced by Michael A. Brown, general sales manager.

Marsanskis Heads Paper Making at Brewer Mill

Eastern Corp. has made several departmental changes in its Brewer (Maine) paper mill, which is headed up by Donald W. Danforth, general superintendent. George G. Marsanskis was appointed superintendent of the paper making department. Paul I. Coughlin has been made assistant superintendent of paper making and Peter Willett supervisor of the beater room.

Mr. Marsanskis, a graduate of the University of Maine in chemical engineering, moves into his new position as a direct result of Eastern's trainee program. Upon completion of this program in 1950 he worked on special engineering projects in the beater room, was head of the unloading crew and in 1954 became assistant to the head of paper making. Previous to joining Eastern he was associated with the Oxford Paper Company in Rumford, Maine.

Mr. Coughlin, a B.S. and M.A. from the University of Maine, was first employed by Bird & Sons in East Walpole, Mass., then with the Penobscot Chemical Fibre Co. in Great Works, Maine. At Eastern he was engaged in chemical engineering research prior to appointment to his new position.

Mr. Willett is a veteran at Eastern, first reporting for work in 1913 on the rag washers in the Brewer paper mill. Except for a period of four years, when he cut pulp wood for Eastern's subsidiary, the Lincoln Pulp Wood Co., his long record of service was in the beater room. He came up through the ranks, working on every job in the department and has held the position of beater engineer and head color man previous to his being promoted to his new position of supervisor.

White Named V.-P. Of Old Dominion

Alan J. White, formerly assistant to the president of the Old Dominion Paper Co., Norfolk, Va., has been elected a vice-president of the company. He joined the firm three years ago.

Named Comptroller Of H.&D.

Frank Dickinson, cost and statistics manager of West Virginia Pulp and Paper Co., is being elected comptroller of Hinde and Dauch Paper Co. of Canada, Ltd., a Westvaco subsidiary.

The position of comptroller is a new one for the Canadian company, created to take care of the expanded accounting activities which have resulted from the company's recent growth and the need for more uniform accounting procedures throughout the organization.

G. H. LaViolette

Named Asst. P. R. Manager

Gene H. LaViolette has been appointed assistant public relations manager of Charmin Paper Mills, Green Bay, Wis. He replaces Leon F. Yeager who resigned to accept a partnership in an insurance firm in Nekoosa, Wis.

Mr. LaViolette will assist Ralph C. Pratt with public relations work including company publications and other work of the department.

National Container Adds Four Vice-Presidents

National Container Corp. has elected four new vice-presidents. All four are former executives of Seaboard Container Corp., which was acquired by National. They are:

Yale Mann and David H. Blatt, general manager and sales manager, respectively, of the Bristol, Pa. plant; and Irving Levine and Frank L. Bernstein, general manager and sales manager, respectively, of the Newark, N. J. plant.

Both plants are now operated under the name of National Container Corp.

Morris Barasch has been elected assistant treasurer of National Container Corp. He was formerly treasurer of Seaboard.

Snyder Leaves St. Regis For Allied Chemical

James H. Snyder, formerly mill manager for St. Regis Paper Co., Bucksport, Maine, has joined the Nitrogen Division, Allied Chemical & Dye Corp., New York.

Mr. Snyder will be a sales development representative in promoting the use of Nitrogen Division's products in the paper industry, particularly ammonium bisulphite pulping.

Mr. Snyder has been affiliated with the pulp and paper industry for a number of years. He was with the Brown Co., Berlin, N. H. before coming to Bucksport. He is a member of TAPPI and the Superintendents Association.

Nominate Three for Georgia-Pacific Board

Directors of the Georgia-Pacific Plywood Co. have nominated for a director, Carrol M. Shanks, president of the Prudential Insurance Co. of America. Stockholders will vote on his election and on the election to the board of H. Stuart Daniels and Julian N. Cheatham, at the annual meeting April 25. Their election would increase the board from nine to twelve members.

Mr. Daniels, president of Georgia-Pacific Paper Co., resigned early this year as executive vice-president and general sales manager of the Union Bag and Paper Corp. to assume the presidency of the new Georgia-Pacific subsidiary. He is immediate past president of the Kraft Paper Assn. and twice has been president of the Paper Bag Institute.

Mr. Cheatham is vice-president of Georgia-Pacific Plywood in charge of the export division and lumbersales. He has been with the company since 1937.

Now Asst. Resident Manager

Frank C. Hawks, Jr. has been named assistant resident manager of the Shelton Division of Rayonier Incorporated. He joined Rayonier at Shelton, Wash. in 1939 as a shift chemist. Rising through the ranks at Shelton, he has held the positions of control chemist, physical test supervisor and special problems chemist. In 1948 he was promoted to process engineer and later to pulp mill shift superintendent. In 1955 he was transferred to the maintenance and engineering department at the Shelton Division.

Directs Quality Control At Sutherland

Edward Stephenson has been appointed director of the new Quality Control department of Sutherland Paper Co. Mr. Stephenson was previously supervisor of the paper testers.

The new department is being organized by Mr. Stephenson, and its function will be to measure and record the quality of production in all converting divisions, using statistical methods.

Quality foremen will report to Mr. Stephenson, who will guide them technically through the formative stages of the work. Mr. Stephenson will report to Ivan Forster, superintendent of all converting divisions.

Paper testing supervision will be taken over by the Research and Engineering Department. The paper-testers will be under the direct supervision of John Heenan.

Specifications for paper board will be established by Wayne Case.

Ellis Transferred To Vancouver

J. G. E. Ellis, assistant chief engineer at Rayonier's central engineering division at Hoquiam, Wash., is being transferred on a temporary assignment to Vancouver, Canada.

Mr. Ellis will work on the $11 million expansion and modernization program of Rayonier's subsidiary, Alaska Pine & Cellulose Ltd. It is expected that this temporary assignment will last from six to eight months.

Since joining the company in 1933, Mr. Ellis has handled engineering assignments at each of Rayonier's three pulp mills in the state of Washington.

Williams Named Supt. at Internaitonal's Mobile Mill

Varnado Williams, who is at present serving as assistant mill manager of the International Paper Co., Springhill, La., will be transfererd to Mobile, Ala. as production supertintendent of the Mobile mill.

It is also reported that R. S. McMillan, who is presently serving as production superintendent of the Mobile, Ala., mill, will be transferred to the Springhill, La., mill as assistant manager.

Pomeroy Succeeds Besley At American Forestry Assn.

American Forestry Assn. has influenced Kenneth B. Pomeroy, one of the top forest management and research specialists in the U. S. forest service, to accept the post of chief forester of the association. He will succeed Lowell Besley, who resigned to join the pulp and paper reseach institute of Canada.

Mr. Pomeroy will take over July 1. He now is chief of the Northwest forest experienmtal station at Upper Darby, Pa., has been with the federal service 23 years and recently developed important techniques in utilizing southern pine slash and boosting gum production.

Moyer and Moslander In New Posts With C-Z

Dr. Wendell W. Moyer, director of research for Crown Zellerbach Corp. has been appointed to the C-Z management committee. This 16-man committee reports directly to the president and acts as a medium for coordinating the current and proposed activities of each major unit. As director of research, Dr. Moyer will bring this function into direct participation in management committee discussions.

Ralph E. Moslander, assistant to the manager, distributor sales, C-Z headquarters, has been transferred to a new position as manager of sales service, C-Z headquarters, San Francisco, Calif.

As manager of sales serviec, Mr. Moslander will give primary training to the sales trainees, relieve salesmen of considerable routine and paperwork, create a manpower pool for future sales positions and be responsible for office space, equipment and clerical personnel in sales offices other than headquarters.

New Chemical Engineer At Research Institute

The Pulp and Paper Research Institute of Canada announces the appointment of Dr. Kenneth Lyle Pinder, to the task force engaged in developing the atomized suspension technique for sulphite waste liquor recovery and other applications.

Two Join Smith Div.

Frank J. Early recently joined the staff of the Smith Paper Division of Peter J. Schweitzer Inc., Lee, Mass. He is assistant technical director.

Mr. Early is a graduate of the pulp and paper school at the New York State College of Forestry in Syracuse. He spent two and a half years with the APW products Co. in Albany, N.Y. before joining the Schweitzer firm.

Another recent addition to the Smith division staff is Thor W. Steinert, a salesman.

York Elected Treasurer Of Great Northern

Donald E. York of Millinocket, Maine has been elected treasurer of the Great Northern Paper Co.

Mr. York joined the firm in 1934. He became assistant auditor in 1949, assistant controller in 1954 and assistant treasurer in 1955.

Pellot Succeeds Walter

Warren M. Pellot has been named treasurer of the River Raisin Paper Co., succeeding J. W. Walter, who served many years as secretary-treasurer and since 1951 as vice-president for finance. Mr. Walter has retired but continues as a director.

Oxford Promotes Jensen

J. Peter Jensen has been promoted to superintendent of the beater department of the Oxford Paper Co.

Born in Denmark, J. Peter Jensen joined Oxford in 1915. In 1944 he was promoted to foreman.

Changes at Doeskin

Doeskin Products, Inc. has promoted H. W. Rowan to the position of plant manager of its Rockland Delaware Plant. Mr. Rowan was formerly plant manager of its Wheelwright, Mass., plant. He joined Doeskin's subsidiary company, Sitrue, Inc., in 1953 as plant engineer.

Joseph Collingswood has been made production manager of the Wheelwright, Mass. plant. He started working in the Mt. Tom plant in 1951 as chemist.

Named Ludlow Director

John McLaurin, chairman of the board of McLaurin Jones Co., of Brookfield, Mass. has been elected a director of the Ludlow Manufacturing & Sales Co., Needham Heights, Mass. Ludlow Manufacturing & Sales is a large manufacturer of paper yarn and jute backing for tufted carpets.

Mr. McLaurin served as president of the McLaurin-Jones Co. from May, 1933, to August, 1955, when his son John M. McLaurin became president.

McLaurin-Jones became affiliated with Ludlow Manufacturing & Sales in September 1955 through an exchange of stock.

Riegel Adds to Board

The Riegel Paper Corp., has elected John Story Wright and Roscoe G. Ingalls to the board of directors. The action increased the directorate from fifteen to seventeen members.

Donohue Executive Changes

Donohue Brothers Ltd., has elected Mark Donohue as executive vice-president of the company. A. Emile Beauvais, C. A., as a vice-president and of Paul M. A. Simard as a vice-president and treasurer.

Harder Joins Shadur Box

Walter Harder has joined the Shadur Box Co., Milwaukee, as factory superintendent. He formerly held the same position with the A. George Schultz Co. of Milwaukee.

Kodak Promotes Malm

Increased responsibility for Carl J. Malm, superintendent of Eastman Kodak Co.'s cellulose acetate development division, is reported. Mr. Malm will be superintendent of the wood cellulose development division and continue as superintendent of cellulose acetate development. He succeeds George A. Richter, who is retiring.

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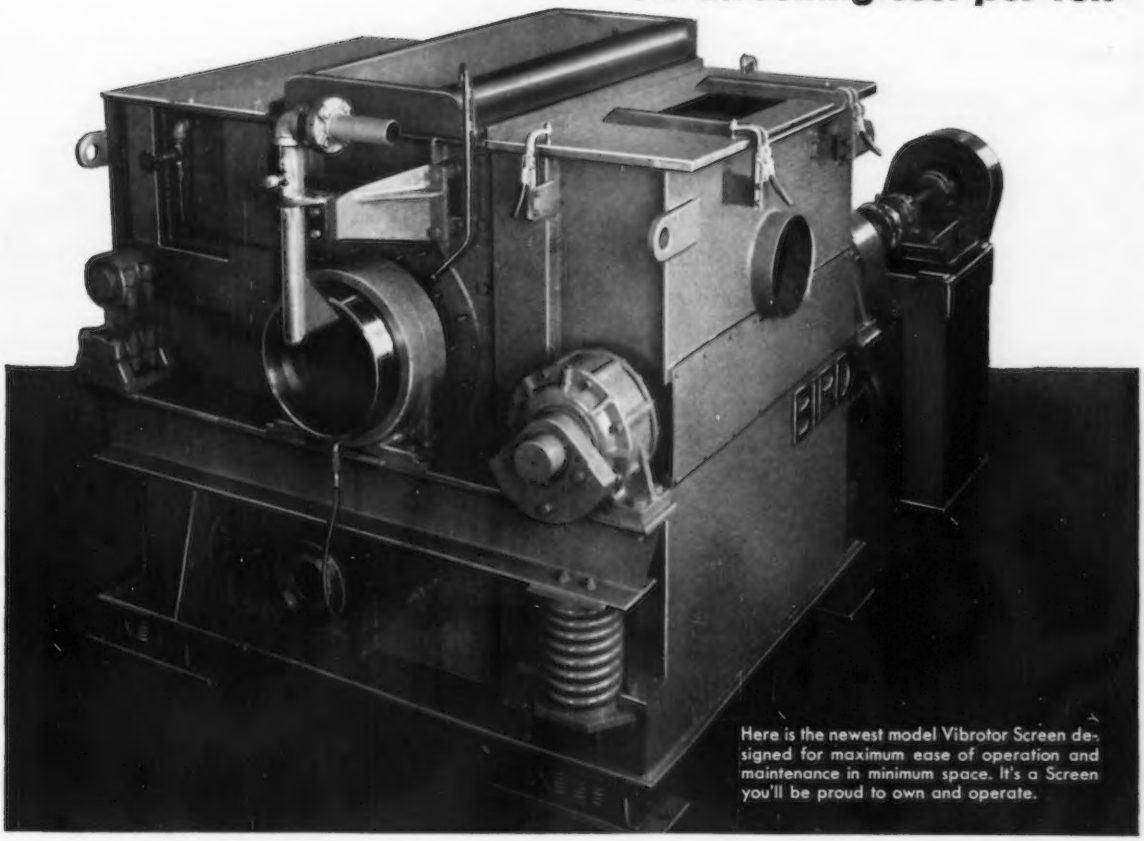

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On *unbleached sulphite* of 1.5% consistency a Vibrotor Screen with .012″ plates delivers 55 air dry tons per day

On *bleached sulphite* at 1.7% consistency, through .012″ plates — 68 tons

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On 1.9% *bleached kraft* through .012″ plates — 80 tons

On 1.7% *semi-chemical* through .018″ plates — 86 tons

On 2.0% *board filler* through .020″ plates — 110 tons

On 1.7% *newsprint* through .014″ plates — 83 tons

On 1.9% *deink stock* through .012″ plates — 148 tons

BIRD MACHINE COMPANY

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Selection and Maintenance of Transmission Belting

Roland V. Smith
Mechanical Superintendent, The E. B. Eddy Co., Hull, Que.

A review of the requirements of efficient belt drives; characteristics and properties of different belting materials; care and maintenance of drive belts; and various types of belts available.

The use of belts to transmit mechanical power dates back to the latter part of the 18th Century. Since then, other, more efficient and more convenient means of power transmission have been developed, but the use of transmission belts in all forms of mechanical equipment is still widespread today and represents a large proportion of the drives in any paper mill.

Originally, the use of belts developed from the necessity to transmit power from a high-powered, low-speed prime mover to a number of smaller, faster mechanisms. Pulleys on the main engine were made large in diameter to gain the requisite speeds for efficient operation of the driven units. Under these conditions, long-centre drives were most suitable.

Although, under certain circumstances group belt-drive systems can still be used to advantage, they have to a large extent been superseded by the use of multiple individual drives. These are usually electric motors.

For reasons of efficiency and size, electric motors were designed with high rotational speeds. To stay within permissible rim speeds, motor pulleys of small diameter had to be used and it became necessary to shorten the centre distances so that the slack strands of the belts would not flop against the tight strands. With pulleys of widely differing diameters and short centre distances, flat drive belts were very difficult to keep tight without overloading bearings. Because they could be run with the return strands slack, thus reducing bearing loading, belts of V section, running in corresponding grooves in the pulleys, became most popular for short-centre drives.

Today, broadly speaking, flat transmission belting is used for long centre, open or crossed-belt drives and V-belts are most often used for short-centre open drives.

It is probable that more research has been devoted to the theory of power transmission by belting than to most other mechanisms, so that, although many phenomena of belt transmission remain unexplained, data for the solution of most belting problems are readily obtainable and it is not my intention to discuss belting design or theory except where necessary to illustrate a point.

I should like to review the requirements of efficient belt drives; the characteristics and properties of the different belting materials; the care and maintenance of drive belts, including tensioning and fastening, and the various types of belts available.

The Requirements of Efficient Belt Drives

Let us study briefly how power is transmitted by a belt. Fundamentally, power is transferred from the driving pulley to the belt and from the belt to the driven pulley by virtue of the frictional grip between the belt and the pulleys. This frictional grip may vary according to the materials of which the belt and pulleys are made, the condition of the surfaces of the belt and pulleys with respect to moisture, dirt, grease, etc., the arc of contact between belt and pulleys and the pressure that exists between the pulley and the belt at the point of contact.

Assuming a pulley of correct design and material, then the conditions necessary for an efficient belt drive are:

a) Suitable belting material
b) Correct belt tension
c) Suitable belt speed
d) Sufficient arc of contact between belt and pulley
e) Suitable operating conditions of cleanliness, humidity and temperature.

Enlarging on the foregoing:

a) Suitable Belting Material

Because of differing operating conditions and for economic reasons, certain properties may have to be sacrificed or reduced, but in general an efficient belting material should have the physical properties of:

1) high tensile strength
2) low weight/tensile strength ratio
3) low stretch
4) high coefficient of friction
5) flexibility
6) resistance to abrasion, heat, moisture.

b) Correct Belt Tension

In order to produce pressure between the belt and pulley, tension must be main-

Presented at the Annual Meeting of the Technical Section, Canadian Pulp and Paper Association, held in Montreal, Que., January 25, 26, 27, 1956.
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tained in the belt. Correct belt tension is that tension which enables the belt to carry its full load without slipping, without undue pressure being exerted on the pulley shaft bearings or overstraining of the fibres of the belt.

c) Suitable Belt Speed

The linear speed of the belt is controlled by the surface speed of the drive pulley. As we have observed, the ability of a belt to transmit power depends upon the pressure of the belt at the point of contact, i.e. intimate contact between belt and pulley. As the belt rotates around the pulley, centrifugal force acting upon the belt creates a tension in it over and above any other existing tension. This tension causes the belt to stretch and, under the influence of centrifugal force it lifts from the surface of the pulleys, diminishing the grip between them.

From the formula for centrifugal tension,

$$T = \frac{W \times V^2}{g},$$

where W = weight of 1 square inch section of belt in pounds per linear foot and V = speed of belt in feet per second, since tension varies directly as the square of the speed, it is evident that high belt speeds reduce tractive efficiency.

Also, since tension varies directly as the weight of the belt section, if high speeds are unavoidable, the weight of the belt should be kept to a minimum.

For this reason, generally speaking, higher belt speeds are permissible with flat belts than with corresponding sets of V-belts.

d) Sufficient Arc of Contact

The arc of contact, or angle of wrap of the belt on the driving pulley, should be as great as possible. When calculating the transmissible load of a drive, a correction factor should be applied depending on the arc of contact. The value of this factor is unity at 180 deg. An angle of 165 deg. is regarded as an average figure for industrial drives.

e) Suitable Operating Conditions

Since moisture and grease will encourage a belt to slip by reducing its coefficient of friction, it is desirable that belt drives be kept as free from these contaminants as possible.

Similarly, abrasive substances that will wear the belt surface, or solids that will break the fibres and corrosives that will attack the belting material should be excluded.

Excessive heat will cause deterioration of the fibres and loss of strength. The ambient temperature should be low enough to allow the belt to run without overheating.

The average paper mill usually leaves something to be desired in the conditions under which belt drives are required to operate. These conditions have to be given strong consideration when selecting transmission belting.

Characteristics and Properties of Belting Materials

Leather Belting

Leather was one of the first materials to be used for mechanical power transmission. It has attributes which make it highly suitable as a transmission medium. Although usually found in the form of flat belting, it is also made into V-belts, round belts and flat link belts.

Leather V-belts are made in a variety of forms. Probably the most common type is of adjustable steel link construction in single V or double V section. Having steel links it does not stretch. It can be adjusted to any length, has a high coefficient of friction and can be run slack, saving wear on sheaves and bearings.

Another, heavy-duty, V-belt of leather consists of a solid leather, V-section belt with leather blocks riveted to the inner face. These blocks close up to form a solid surface as the belt conforms to the sheaves thus providing additional groove wall traction surface with a high degree of flexibility.

Laminated leather V-belting consists of overlapping, laminated links forming a V section secured together by snap-head rivets. This form of belting can be adjusted to any length, is extremely flexible and gives good traction on the walls of the sheave grooves.

A form of leather link belt in common use in paper mills is the flat-link belt for slow speed, heavy pull, slip drives such as winder or reel drives. It consists of rows of hinged leather links built up to form a belt of any width up to 36 in. The running face of the belt is formed by the edges of the links. Hinge pins are of steel with rivitted heads. Belts of this construction give long life in spite of the wear and frictional heat associated with slip-belts. Despite their heavy section they are exceptionally flexible and will conform readily to small pulleys. Being double-sided, they can be used with idlers, the adjustment of which is the usual method for controlling the amount of slip required in the drive.

Round leather belting is seldom used for paper mill machinery. It is commonly used on light-duty, high-speed, single-belt drives and ranges in diameter from $\frac{1}{8}$ in. to $\frac{3}{8}$ in.

Flat leather belting is made by cementing together strips of leather taken from the "butt end" of steer hides. (The "butt end" of the hide is that portion approximately 48 in. from the root of the tail towards the head and 24 in. on each side of the backbone). The strips are built up in plies to the required thickness, the scarfed ends of the strips being staggered in the various plies for additional strength. Cements used to join the plies may be waterproof or non-waterproof.

There are five common grades of flat leather belting:

1) Waterproof, oak tanned
2) Non-waterproof, oak tanned
3) Waterproof, mineral tanned
4) Waterproof, oak tanned, mineral retanned
5) Combination oak tanned and mineral retanned.

The characteristics of waterproof oak-tanned belting are:

a) Available in 1,2 or 3 ply thicknesses

b) Possesses low stretch

c) Not flexible when new, thus not adaptable to small-diameter, high-speed pulleys

d) Has a coefficient of friction ranging from 0.27 when new to 0.6 when well run in

e) Resists moisture, steam, acids and high temperatures

f) Single-ply construction has an allowable effective tension of 40 pounds per inch width for $\frac{1}{8}$ in. thickness, to 50 lb. per inch width for 3/16 in. thickness.

Double-ply construction has an allowable effective tension of 60 lb. per inch width for $\frac{1}{4}$ in. thickness to 75 lb. per inch for $\frac{3}{8}$ in. thickness.

Triple-ply construction has an allowable effective tension of 100 lb. per inch width for $\frac{1}{2}$ in. thickness to 110 pounds per inch width for a 9/16 in. thick belt.

Mineral retanned oak leather has different characteristics from those produced by regular oak tannage, the principal properties being:

a) Possesses greater power transmitting capacity width for width or thickness for thickness than regular oak-tanned belting

b) Is very flexible and can be used on small-diameter, high-speed pulleys

c) Has a high coefficient of friction in the range 0.60 to 0.85

d) Resists water, moisture, steam, heat, oils and acids.

Combination oak-tanned and mineral retanned belting is made by cementing together, flesh side to flesh side, a ply of oak-tanned leather and one of mineral retanned leather. This construction, which is made in double-ply thickness only, combines the rigidity of oak-tanned leather with the high coefficient of friction of the mineral retanned type. It is particularly useful for high-powered, slow-speed drives, being especially recommended for drives with belt shifters or stepped cones, since the oak ply resists

the transverse crumpling action of shifter forks or the edges of cone steps.

Solid-Woven Cotton Belting

This type of belting is made from long-fibre cotton, woven into belting of various widths and thicknesses, impregnated with special compounds to give resistance to mechanical and atmospheric effects.

Its load-carrying capacity is about the same for similar thicknesses as oak-tanned leather belting.

Solid-woven, impregnated, cotton belting can withstand heavy shock loads and is not affected by mineral oils. Although it is steam- and moisture-proof it is liable to stretch or shrink under varying conditions of moisture and requires special dressings to preserve its properties.

Belting of this type is made from the long hairs of Bactrian camels interwoven under heavy tension with long-fibre cotton into a dense, solidly-woven fabric. It is impregnated with special compounds for protection and internal lubrication.

Although its load-transmitting capacity is slightly below that for similar thicknesses of oak-tanned leather belting, camel's-hair belting possesses several advantages over the leather. Its principal characteristics are:

a) Pliable and elastic throughout its life, camel's-hair belting can conform to small pulleys and absorb shock loading.

b) It does not shrink

c) Moisture-proof and steam-proof, it will also resist corrosive acids and mineral oils

d) It will resist temperatures as high as 300 deg. F.

A disadvantage of camel's-hair belting is that its extreme elasticity requires high initial tension and repeated take-up.

Stitched, Cotton-Duck Belting

This belting is made up of plies of impregnated cotton duck stitched together. The two common styles are of round-edge or folded-edge construction, the round-edge construction giving greater resistance to ply separation and to the action of belt shifters. This type of belting is made in a wide range of thicknesses, depending on the number of plies and the weight of duck. It is supplied in widths from 2 to 72 inches.

Stitched, cotton-duck belting possesses flexibility and elasticity and withstands water and steam of moderate temperatures. It is not resistant to corrosive acids or caustic solutions.

Teon belting is also of plied, cotton-duck construction in which the plies are cemented together with a special compound and reinforced with closely-spaced metallic stitching which gives high resistance to ply separation.

Teon belting is made in various thicknesses and widths up to 26 inches. It is resistant to moisture, steam, corrosive acids and mineral oils and temperatures up to 300 deg. F.

It will not resist the action of caustic soda or bromic acid.

Balata belting is another treated cotton-duck belt. It consists of plies of 26- to 38-ounce cotton-duck impregnated with a gutta-percha-like gum called "balata". This gum gives wear and moisture-resisting properties to the belting.

Balata belting is made in widths up to 72 inches. It possesses low stretch, is hard-wearing and moisture-resistant. However, it will not stand up to high temperatures, balata gum having a melting point of 120 deg. F. and poor resistance to mineral and vegetable oils and acids.

Rubber Belting

This classification covers a wide range of transmission belting representing the largest proportion of belt drives in use today.

Most flat rubber belts consist of plies of cotton-duck or synthetic fabric impregnated with a tough, resilient, slow-aging rubber compound. This gives surface friction to the belt and provides internal cushioning for the individual fibres.

Another type of flat rubber belt has groups of cords of cotton, synthetic fibres or high-tensile steel lying side by side and encased in a rubberized-fabric envelope.

The rubber V-belt is of similar construction to the fore-going, except that the loops of cord or steel are cushioned in a heavy block of pliable rubber, the whole encased in a tough, rubberized-fabric cover.

Although 28- to 35-ounce cotton duck was the most common tensile-strength member in friction-surface rubber belting, it is rapidly being replaced by fabrics of synthetic fibre such as rayon, which possesses about 50 per cent less permanent stretch and has a longer life potential.

Rayon fabirc belting can be supplied endless or can be spliced in the field. It has particularly good fastener holding strength and, compared to cotton, has higher tensile strength and higher shock-loading resistance. It can thus be made much thinner, (from 25 to 30 per cent for equivalent power transmitting capacity) which makes it more pliable with a longer flex life. The cost is comparable to that of cotton-fabric belting.

For heavy-duty service, a special design of endless flat rubber belt has been developed, consisting of endless loops of pre-stretched synthetic cords lying side by side in a single layer and surrounded by an envelope of rubber and fabric. This envelope ties the cord layer together, cushions the individual strands and provides a suitable running surface. Similar belting for exceptionally heavy service has flexible high-tensile steel cable in place of the fibre cords.

These belts are much thinner than plied belts of equivalent horsepower rating. They have low permanent stretch, so require little or no adjustment after running in. They run silently and smoothly with little tendency to run off the pulleys. Because of their uniplanar construction there is no internal stress such as develops in multi-ply belts. They thus have extremely long flex life. High speeds, up to 10,000 f.p.m., are permissible without excessive slip occurring.

V-belts for especially rugged service also employ synthetic fibres or high-tensile steel strands. Such belts are usually of notched or cogged construction for superior flexibility and heat dissipation.

Rubber belting can be supplied with different rubber compounds to produce resistance to abrasion, heat, fatigue, corrosion, oils, moisture, etc., so it is possible to select a suitable rubber belt for almost any given set of conditions.

The two most recent developments in rubber belting are the combined multiple V-belt and the positive-drive toothed belt.

The combined multiple V-belt consists of several V-shaped sections of rubber moulded side by side on the underside of a flat rubber belt. Being a single unit across the face of the sheave, the problem of matching V-belts is eliminated. For the same reason, all parts of the belt work together with even, uniform tension resulting in a higher horsepower capacity than that of a similar multiple-belt drive.

Other claims for this belt are that by maintaining a constant pitch diameter at all loads it does not produce speed fluctuations; that it causes less wear on belts and sheaves and eliminates belt turnover in the grooves; that it is more flexible and cooler running and that it allows a reduction in belt inventory because there are only two standard sections compared to the five sections in orthodox V-belts.

The positive-drive toothed belt is used primarily as a timing belt and its use has been limited so far to special machines. However, it would seem to hold distinct possibilities for our industry, particularly where speed ratios are high and centre distances are short, and for conditions where accurate speed synchronization is required.

The belt is constructed of a tension member of steel cable continuously wound in a single layer and moulded in a thin envelope of neoprene. On the running face of the belt, teeth of a fairly hard neoprene compound are moulded

integrally with the neoprene encasing the steel cables. These teeth are not to be confused with the notches or cogs found in some V-belts. They are scientifically designed and moulded to close tolerances after the manner of gear teeth and fit into grooves having the same circular pitch cut across the face of the pulley.

It is claimed that the timing belt, having positive engagement, eliminates slippage and creep, while maintaining precise speed control at all loads. Because of the positive engagement, drives with very short centres and high ratios are permissible.

Very high belt speeds—as high as 16,000 f.p.m.—are practical with this belt owing to its light weight that keeps centrifugal force to a minimum. On the other hand, their positive-drive feature enables timing belts to be run accurately at speeds so slow that movement is imperceptible to the eye.

Taking Up Belt Stretch

All drive belts experience stretch, especially during their initial running-in period. In some cases, particularly with the pre-stretched fibres and the steel strand types of belts, the amount of stretch may be insignificant. In the majority of cases, however, some arrangement has to be made for taking up stretch if the drive is to remain efficient without excessive slip.

On fixed centre drives, if special belt tightening devices are not employed, it is standard practice to allow for the initial stretch by cutting the new belt short of the actual length as measured by taping round the pulleys. The amount usually allowed for stretch in plied rubber-duck belting is:

5/32 in. per foot of overall length for 3, 4 and 5 ply.

1/8 in. per foot of overall length for 6,7 and 8 ply.

3/32 in. per foot of overall length for 9, 10 and 12 ply thicknesses.

There are many mechanical devices in use for taking up stretch in fixed-centre drives. Idler pulleys, of which there are several models both hand-operated and automatic, are the most common. For electric-motor drives the pivoted and spring-loaded bases are the most efficient of the automatic take-ups.

The principal disadvantage of hand-operated tighteners is that there is no automatic adjustment for continued stretch in the belt and frequent hand adjustment has to be made, relying on the judgment of the operator. The same criticism applies in the case of tension adjustment by tightening up the sliding base of an electric motor.

The majority of the automatic idlers are weight-and-lever loaded. Disadvantages of most idlers of this type are that they require considerable force to overcome their inertia, resulting in unnecessary strain on the belt; they are frequently sluggish in operation due to the friction of complicated mechanical leverages; and the force applied by the idler remains constant regardless of the load being transmitted by the belt.

"How many of us can honestly say that we devote care and maintenance to our belting commensurate with its importance?"

A common failing in idler-pulley design is that of having the pulley of inadequate diameter. In order to produce maximum wrap round the smaller pulley of a drive, the idler pulley has to be located in close proximity to it. This results in a quick reversal of the run of the belt in an S-bend, which, with small diameter pulleys, is ruinous to the fibres of the belt.

There are two main types of pivoted-motor bases, the Rockwood and the American types. The Rockwood pivoted base depends mainly on the weight of the motor acting through pivot arms of adjustable length to supply tension to the belt.

"The American, or reaction-torque type of pivoted base consists of a cradle mounting for the motor in which it is free to swing through an arc. Under the effect of its reaction-torque, the motor swings about the cradle pivots. This has the effect of lengthening the belt centres, thus taking up belt stretch. Initial tension is provided by the weight of the motor, but once the motor starts it supplies its own tension. This type of pivoted base causes the total belt tension to vary with changes of load.

The spring-loaded motor base is an automatic type used in place of the hand-adjusted motor on slide rails. It consists of a stationary base on which the motor base may slide under the action of spiral springs whose tension may be adjusted manually. This spring tension automatically supplies tension to the belt and takes up its stretch."

Pivoted and spring-loaded motor bases may be operated in any mounting position. With the spring-loaded motor base, the direction of pulley rotation has no effect upon its operation, but the pivoted motor base types require the tight side of the belt to be adjacent to the pivot point.

Most paper-machine lineshaft belt drives are vertical. The stretch of the belt causes it to drop away from the bottom or driving pulley. This trouble can be reduced by designing the drive about 15 degrees from the vertical, but the best method of taking up the stretch would be by a controllable idler applied to the slack side of the belt. Satisfactory idlers for cone-pulley drives are available in which a cone pulley of similar dimensions to the drive pulley is applied to the slack side of the belt and adjusted by pneumatic cylinders or hand-operated screws.

Crossed belts also seem to reduce stretch problems on vertical drives owing to the increased arc of contact of the belt on both pulleys. For successful crossed belt operation, the belts should cross as close as possible to the centre between the two pulleys and centre distances should be adequate. Crossed belts should not be used where the pulley ratio exceeds 4 to 1, or with belting wider than 8 inches. Friction of the belts at the cross-over point reduces efficiency and wears the belt. A flush-type belt fastener must be used to prevent damage at the point where the belt crosses.

Methods of Joining Transmission Belts

The weakest point in a transmission belt is usually the joint. Some belts, of course, are of literally endless construction and thus are spared any weakness from this source. Other belts are called endless, inasmuch as the joint is made integral with the belt, as in leather belting and plied rubber belting. In these types of belts the joint is made by cementing together the laminations of the material in a comparatively long splice. This creates a most efficient joint with strength equal to the rest of the belt. However, the use of endless belts is limited, the time required to complete a successful splice being a restricting factor.

The other most common methods of joining belts use lacing or metallic fasteners. Both methods weaken the belting material, either by reducing its substance or by crushing the fibre. In some cases the fastening material itself introduces troubles by not conforming accurately to the pulley curvature or by wearing out through contact with the pulley or belt shifter.

These evils must be accepted in the interests of speed and convenience, but may be minimized by proper selection and application.

All types of flat belting may be joined by lacing the ends together. The materials commonly used for lacing are raw-

hide or metallic wire. Both materials make strong, flexible, flat joints. Unfortunately, laced joints are usually made by hand and take considerable time.

There is a wide choice of metallic fasteners available, most of which can be quickly applied with simple tools without having to remove the belt from the pulley. The most common types are the toothed-jaw type which grips the belt from both sides and has a hinge pin for a strong, flush joint; the bolted metal plate fastener and the riveted steel plate fastener. Both of the latter types have metal plates curved to conform to the pulley surface, making a light strong joint which, however, is unsuitable for reversed drives or idler pulley operation.

The wire-hook type of fastener with a fibre or metal hinge pin is applied by means of a portable machine. This joint is flexible and can be quickly disconnected. It also gives a minimum amount of metal at the joint. The width of belts to which it can be applied is limited.

In all cases, it is important that the ends of the belt should be cut square and fitted closely when the joint is made.

The scope of V-belting is increased by making a special grade in long lengths so that belts can be cut to suit non-standard drives. This belting has a back-bone of heavy cross-woven duck to provide a firm anchorage for metallic fasteners. The most common types of fasteners for open and V-belts are the hinge-type or hook-type secured to the ends of the V-belts by nails or screws.

Another, versatile type of open end V-belt which can be adjusted to infinite lengths is made up of overlapping, laminated links secured together by means of snap-headed studs.

Care and Maintenance of Power Belts

The function of transmission belting is to deliver mechanical power, efficiently and economically, from its source to locations where it can best be utilized. This can only be achieved by using suitable belting materials with physical properties as described earlier to give long and trouble-free life.

Our belts represent a major investment. They also repreesnt one of the chief sources of possible machine downtime. How many of us can honestly say that we devote care and maintenance to our belting commensurate with its importance?

The care of belting starts in the belt storage area, which should be dark, cool and dry, since light, (especially sunlight), heat and moisture are detrimental to all types of belting. Belting should be stocked in racks of horizontal bars which pass through the roll hubs. Because of deterioration in storage, and also because it reduces inventories, the amount of spare belting should be held to the absolute minimum.

After installation, regular inspection and care is essential to the maintenance of continuous, economical operation and maximum production.

Since the efficiency of the belt is dependent on adequate tension and a cohesive grip on the pulley, it is necessary to take up excessive slackness and, in the case of flat belts, to condition the belt with a suitable dressing.

Belt dressings vary widely and should be selected to suit the particular material from which the belt is made. A belt should grip the pulleys with a clinging, sucking action, but should release this grip without sticking. Power is wasted and damage can be caused to the belt in tearing a sticky belt free from the pulleys. Most of the sticky dressings are compounds containing rosin, asphalt or pitch, which have no lubricating properties so do not condition the belt. They may get you out of a belt-slipping jam temporarily, but excessive use can only cause damage to the belt.

From the standpoint of conditioning and lubrication, belting can be considered in two general classes. One class, such as rubber, teon and balata will not absorb lubricants, the other class including leather, cotton, camel's hair and canvas are porous and will absorb lubricants.

The non-absorbent belts have the internal cords or fibres cushioned and isolated from contact with each other by the rubber or gums with which they are bonded. These belts should only be given light surface treatment on the pulley side sufficient to prevent glazing or penetration by moisture. Castor or linseed oils are suitable treatments for rubber, balata, teon and other non-porous belts.

The porous belts should be treated with a lubricating dressing applied to both front and back. The lubricant should provide internal lubrication for the fibres, enabling the belt to retain its strength and pliability without developing internal heat. Suitable lubricants for leather belting are neat's foot oil or a paste of cod oil and tallow. Camel's hair, canvas and cotton belting should only be treated with special oils or impregnating compounds supplied by the belt manufacturers.

No belt dressing of any kind should ever be applied to rubber V-belt drives. It would cause deterioration and shorten the life of the belts.

Running surfaces of pulleys should be cleaned regularly to prevent the build-up of solids that could cause damage to the fibres of the belts. Similarly, the belt faces should be cleaned periodically since they tend to accumulate dressing, dirt and grease. The use of common soap or tri-sodium phosphate followed by rinsing with water is recommended for rubber, teon and balata belts.

Leather, cotton, camel's hair and canvas belting can be cleaned with a mixture of gasoline and turpentine or gasoline and carbon tetrachloride. The gasoline should not contain tetra-ethyl-lead. Care must be exercised in the use of both mixtures because of the fire hazard and the effect of harmful fumes.

Operating belts should be minutely examined at frequent intervals, with particular attention paid to the joints. Belt fasteners should be examined for cracks, loose or broken rivets and hinge pins, or bent plates. A projecting fastener striking the belt shifter will rapidly cause destruction of the belt. The fabric of the belt adjacent to the fasteners should be carefully examined and a new joint made at the first signs of defect.

Properly designed V-belt drives require less attention, generally, than flat belts. They will usually give advance warning of trouble by the failure of one or more belts without necessarily putting the whole drive out of operation.

A few simple checks made regularly will materially increase the life of V-belts, sheaves and equipment.

Improper alignment of the sheaves is the most common cause of belt and sheave wear. The sheaves should be checked for alignment with a straightedge, although a piece of string has been used for this purpose on occasion.

If belts show a tendency to turn over or climb out of their grooves, the cause is generally groove wear, insufficient tension or misalignment. A V-belt should ride in the sheave groove so that the top surface of the belt is just above the highest point of the sheave. A low-riding belt may bottom in the groove, losing the wedging action on the sides of it. This causes belt slip and often results in excessive pressure being applied to the shaft bearings when belt tension is increased to overcome the slipping. Sheaves with worn, broken or rough grooves should be replaced. When installing V-belts after the drive has been properly aligned the slack should be worked round to the top strands. The tension should then be adjusted so that when struck with the fist the belts vibrate and when depressed by hand the back of each individual belt is in line with the bottom of the other belts on that side of the drive.

The machine is only as good as the belting that drives it. Other methods of transmission may gain increasing popularity as time goes on, but very few of them will be as easy to inspect, as simple to repair and as cheap to maintain as properly selected and carefully treated belting.

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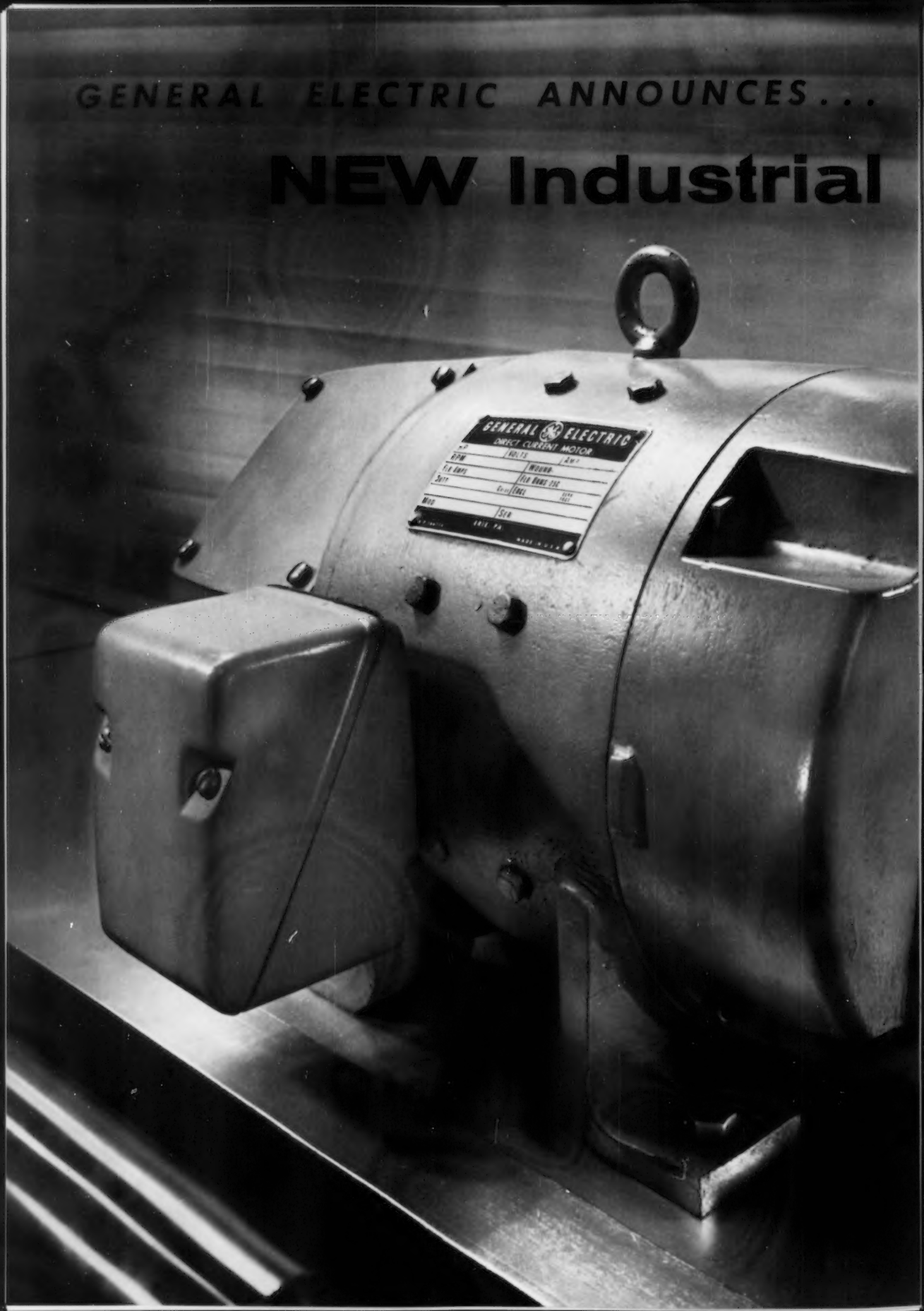

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Fig. 3059 (Sectional) A.S.A. 300-pound Steel Lubricated Plug Valve

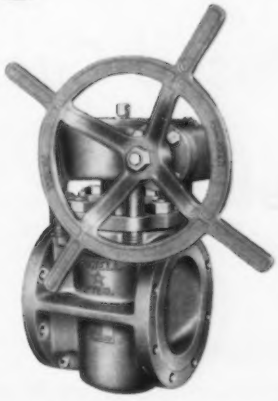

FIG. 1559G—150-pound Steel Lubricated Plug Valve. Gear operated

FIG. 2200—175-pound W.O.G. Semi-Steel Lubricated Plug Valve

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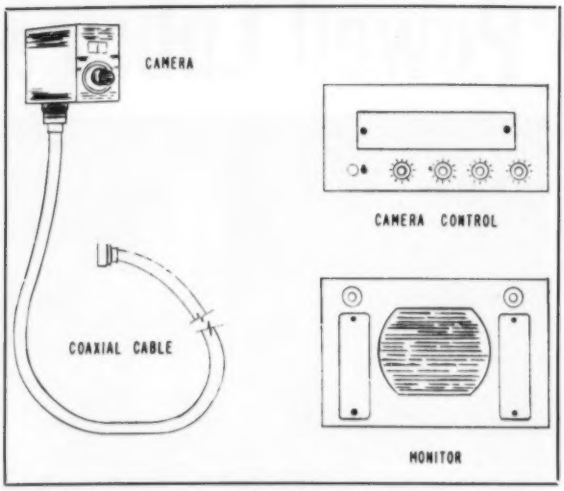

FIGURE 1—BASIC COMPONENTS OF industrial television.

Closed circuit television as a means of observing, inspecting, recording, controlling, training, and promoting — has a definite place in the pulp and paper industry.

The use of the television medium in industry, including pulp and paper, is not new. Applications of television, however, have been sporadic and limited in function, and a description of some known installations follow. A closed circuit television system, with basic components of camera, receiver and a connecting link, such as coaxial cable or microwave linkage, as shown in Figure 1, has been developed into a compact, rugged, reliable, economical tool which is easy to install, operate and maintain and completely capable of all the above mentioned functions.

Chip Storage Silos

One of the pioneers in the utilization and installation of a closed circuit television system was Rayonier Incorporated, in their plant at Jesup, Ga. A Diamond Power Specialty Corp. system is employed to ascertain and indirectly control the chip level in the chip storage bins. As illustrated in Figures 2, 3 and 4, this is accomplished by a carriage mounted camera which is propelled by a rope-pulley system, and which parallels the travel of the shuttle conveyor over the storage bins. The rope-pulley system drive motor and camera tilt mounting mechanism are controlled from the monitor station, located on the ground floor. The camera is positioned and focused on the storage bin to be filled; the shuttle conveyor tripping mechanism is also positioned and the conveyor drive motor energized from this same control point. The operator can then view the entire filling operation and can move the shuttle conveyor triping mechanism when the desired chip level is attained or stop the conveyor when an emergency arises.

Pulp Washing

The installation of an R.C.A. viewing system in a pulp washing plant was described in the December, 1955 issue of *Mill and Factory*. The substitution of the television camera for the periodic inspection trips of the attendant is advocated to avoid unnecessary and costly production delays due to improper pulp formation or washer vat overflow. Camera installation at the drum transmits a continuous indication of washing operations to the monitor or receiver on the main production floor. This indication warns the attendant of impending danger in sufficient time to prevent it.

THE AUTHOR

Another closed circuit system as applied to the pulp washing process and installed in The KVP Co. plant in Kalamazoo, Mich. was described in the December 12, 1955 issue of the *Paper Trade* JOURNAL. This system and the RCA system, described in the previous paragraph, however are believed to be one and the same. There is a similar installation on a pulp washer at the Spotswood mill of Peter J. Schweitzer Inc.

Other possible applications of closed circuit television in the paper and pulp industry and a brief description of system installation are as follows:

Wood Yard Conveyors

Camera installations at points of transfer or points of possible jamming with monitor installation at the barking drum or wood room would provide the operator the means of observing, inspecting and controlling the conveying operations. Whether or not such an installation is economically feasible is largely dependent upon the size and operating methods

employed in the wood yard. The economics of closed circuit systems, in general, will be discussed in a later paragraph.

Causticizing Plant

Remote viewing of the lime bins, kiln discharge hopper and lime mud filter is recommended as a means toward more centralized control. Filling operations at the lime bin can be observed and indirectly controlled as described for chip handling. Cake formation and prevention of damaging overflows can be observed through camera installation at the mud filter. The detection of clinker plugging at the kiln discharge hopper is also more readily observed by remote closed circuit viewing.

Recovery Plant

As a safeguard to human life, the television camera can be utilized to transmit the furnace smelt discharge and the steam and water shatter sprays indications. This installation would eliminate the necessity of an operator entering the hazardous area. Cameras can be protected by proper installation in suitable enclosures.

Neutral Sulphite Rotary Batch Digesters

Camera installation at the dump bins or leach casters provides the operator an indication of the position and condition of the unloading equipment prior to, and at the completion of, digester discharge and assures him of proper unloading operations without leaving the cooking station.

Remote Conveying Systems

Automatic conveying of mill rolls or pallets to storage or shipping points lends itself to closed circuit television viewing. The installation of cameras at loading and/or discharge points can transmit the indication of these functions to a central control point monitor for purposes of observation, recording quantities delivered, and indication of mechanical disturbances.

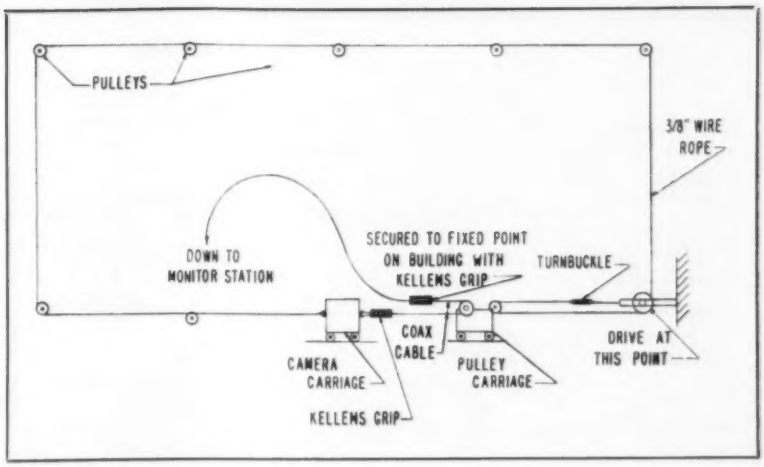

FIGURE 2—ROPE-PULLEY SYSTEM camera carriage travel.

Power Boilers

Cameras focused on boiler water and steam gages, flame control instruments, and on stacks and auxiliary equipment, can send indications to the engineer's or superintendent's office where they can be individually or simultaneously viewed. This permits the direction of the attention of several boiler room personnel to other phases of operation.

Job Training and Education

Job training and education programs supplemented by closed circuit television viewing offer many unique advantages. Training films or 'live shows' can originate in and be transmitted to any part of the plant for "classroom" viewing. Because rooms do not have to be darkened, ventilation is better, drowsiness is deterred and the audience more alert. Job trainees are able to take notes while viewing the programs. These advantages, and many others not mentioned, are indicative of the merit of such a training program.

Promotional

The use of closed circuit television as a promotional tool also has enormous potential. Activities in all parts of the plant can be televised and transmitted to executive offices, directors' meetings, visiting groups, and the public. Through these programs, management-employee, company-stock-holder and company-community relationships can be better understood and harmoniously furthered.

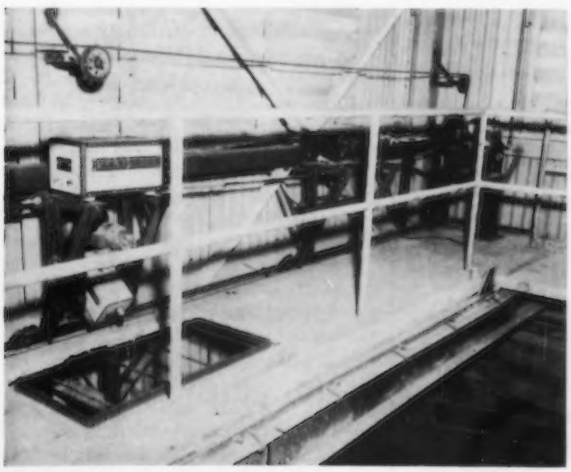

FIGURE 3—FRONT ELEVATION—camera carriage installation.

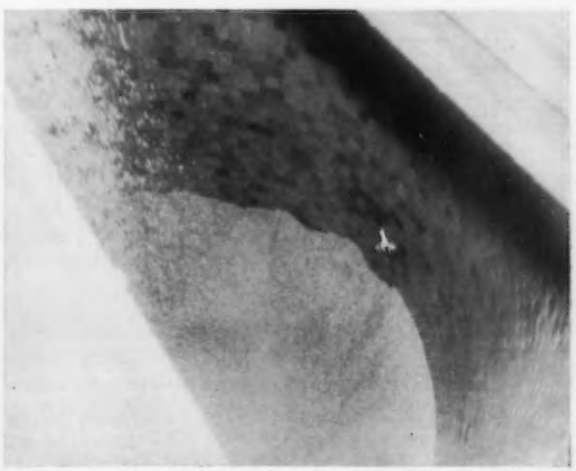

FIGURE 4—Looking into chip storage silo.

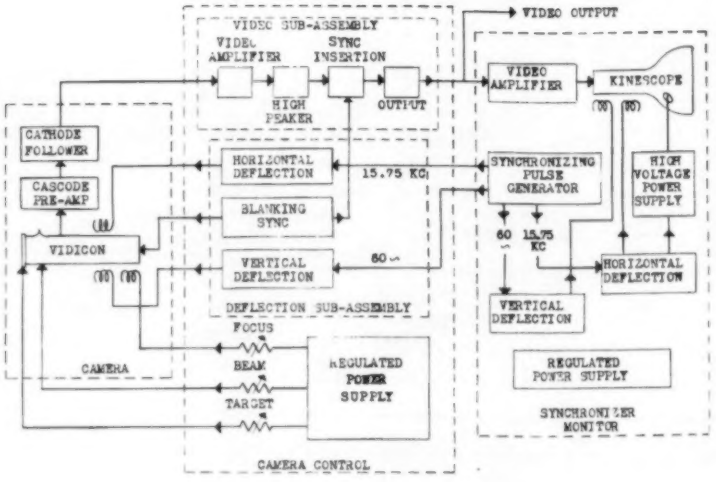

FIGURE 5—BASIC INDUSTRIAL TELEVISION CAMERA SYSTEM.

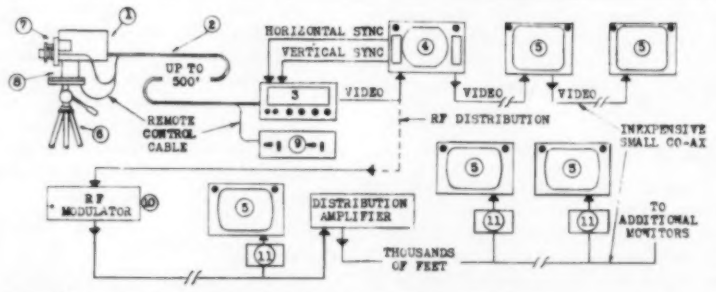

FIGURE 6—BASIC INDUSTRIAL TELEVISION SYSTEM I.

1—Camera
2—Standard camera control cable
3—Camera control
4—Sync monitor
5—Remote monitor
6—Camera tripod
7—Remote lens aperture and focus control
8—Remote control plan and tilt control
9—Remote control panel
10—Video modulator
11—Tuner

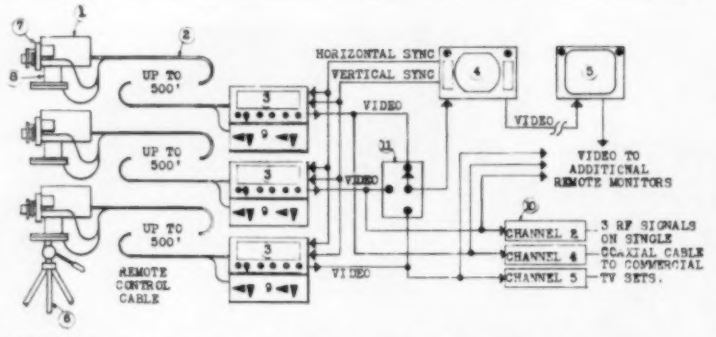

FIGURE 7—BASIC INDUSTRIAL TELEVISION SYSTEM II.

1—Camera
2—Standard camera control cable
3—Camera control
4—Sync monitor
5—Remote monitor
6—Camera tripod
7—Remote lens aperture and focus control
8—Remote camera pan and tilt control
9—Remote control panel
10—Single channel low-band video modulator
11—Video switcher

System Description

As stated previously, closed circuit systems are made up of these basic components, 1) Camera, 2) Video Monitor or Receiver, and 3) A Connection Link. A brief description of system components and accessory equipment available are as follows:

The camera can be furnished as a completely self-contained unit or with separate camera control unit, housing power supply and operative control devices. In either case, the following component parts, as shown in Figure 5, are normally furnished:

Vidicon Pick-Up Tube
Video Amplifiers (8 Megacycle)
Horizontal and Vertical Deflection Chassis
Power Supply Control Equipment

The Vidicon pick-up tube, developed in recent years, has permitted a more compact and less expensive camera unit. It is a high resolution tube capable of producing 500-600 lines minimum. Because of its high sensitivity, special lighting is not normally required; in fact, good definition may be obtained with incident illumination as low as five foot-candles. Special electronic illumination controls are also available which automatically compensate for changes in the lighting intensity.

The electronically regulated power supply insures stable camera operation regardless of the line and load variations of the supply system. The camera pan-tilt head, lens aperature and focusing device can be furnished completely remote-controlled. Weatherproof, dust-tight, and explosion-proof housings have been developed and are available for camera installation outdoors or in hazardous areas. Synchronizer or video monitors are employed for television viewing. Synchronizer monitors are normally furnished with an aluminized, black daylight tube, horizontal and vertical deflection chassis, eight-megacycle video amplifier, power supply regulating equipment and sync-generator, as shown in Figure 5.

Although the eight megacycle band width theoretically is capable of 640 lines resolution, it is limited by the camera Vidicon tube as described above. The sync-generator produces a standard 525-line two to one interlaced picture. Invariably a coaxial cable is the transmitting link between the camera and the receiver, however, when extremely long distances must be spanned, micro-wave links are substituted.

System Installations

The versatility of closed circuit systems permits numerous possible installations, from the extremely simple system of one camera and one receiver to the

most complex two-way, multi-channel systems.

The following, along with the accompanying illustrations, describe the basic one-way television systems available today.

Figure 6 depicts the system in which a single camera and sync-monitor supply a video signal to one or an unlimited number of video monitors, and through the RF modulator and separate tuners, if desirable, to one or more standard video monitors. For intermittent duty, home receivers may be used in place of the tuners and standard video monitors.

Figure 7 indicates a system which permits the simultaneous operation of two or three cameras. It is possible in this system to modulate the output of each camera at a different commercial channel frequency and distribute these signals simultaneously over one coaxial cable.

Figure 8 shows a system utilizing a number of cameras but does not permit simultaneous operation of two cameras or more, as shown in Figure 7.

The systems described are simple and basic. These systems and modifications thereof are those which would normally be installed for present industrial, functional requirements. The technological, economical and functional aspects of two-way, multi-channel systems as applied to industry, are far too detailed and complex to warrant discussion, and are only mentioned to advise of the availability of such systems.

Economic Aspects

From an economic standpoint, closed circuit television systems are within practical limitations. The overall costs of such systems are composed of 1) initial television equipment and installation costs, 2) auxiliary equipment (as warranted by the complexity of the system) and installation costs, 3) maintenance costs, and 4) operating costs.

The cost of a dependable system consisting of camera, lens, receiving station and approximately two-hundred feet of cable, will fall within a $2700 to $3700 price range.

Periodic maintenance charges, including the replacement of a relatively, expensive camera tube, have been shown to be approximately $500 per year, per set of equipment. This unit cost of course would decrease as additional facilities were added. The power rating of most systems is less than 1000 watts, and based on 2000 hours annual operation and power rates at $0.01 per kilowatt hour, the annual operating costs are approximately $20.00 per year, per set.

Costs of auxiliary equipment such as special housings, mountings or camera travel systems, floodlighting units for night-time viewing, etc., which make up the final portion of the total cost are difficult to ascertain or even surmise. However, in general the total cost, even when based on a period of one year, evolves into a low cost per hour of operation.

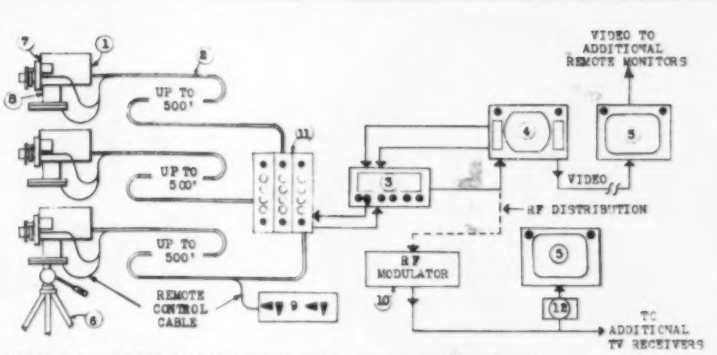

FIGURE 8—BASIC INDUSTRIAL TELEVISION SYSTEM III.

1—Camera
2—Standard camera control cable
3—Camera control
4—Sync monitor
5—Remote monitor
6—Camera tripod
7—Remote lens aperture and focus control
8—Remote camera pan and tilt control
9—Remote control panel
10—Single channel low-band video modulator
11—Control switcher
12—Tuner

Conclusion

Summarizing, the following are evident:

- The present closed circuit television system installations in the paper and pulp industry, are limited in application and function.
- The recent developments and advancements of television system equipment provide the versatility required for numerous applications and functions.
- Possible installations in the paper and pulp industry have been cited as a means toward more efficient plant operations and reduced costs through better utilization of manpower and more centralized control.
- Present system economics may temporarily curtail the application and installation of closed circuit systems in the smaller and medium sized plants. However, if we use the television advancements of the last ten years as a criterion of comparison, the near future assumes a startling complexion.

Acknowledgments

The author wishes to acknowledge the assistance of E. K. Murphy, electrical engineer, Rayonier Incorporated, New York, N.Y. and H. E. Ransford Co., Pittsburgh sales representative, Kay-Lab, Inc., San Diego, Calif.

"Application of Industrial Television to the Steel Industry," John Macalla. Iron and Steel Engineer, Pittsburgh, Pa., Vol. 32, No. 12, December 1955, pp. 66-71.

Presented at A.I.E.E. Pulp and Paper Conference, Gainesville, Fla., March 8-9, 1956

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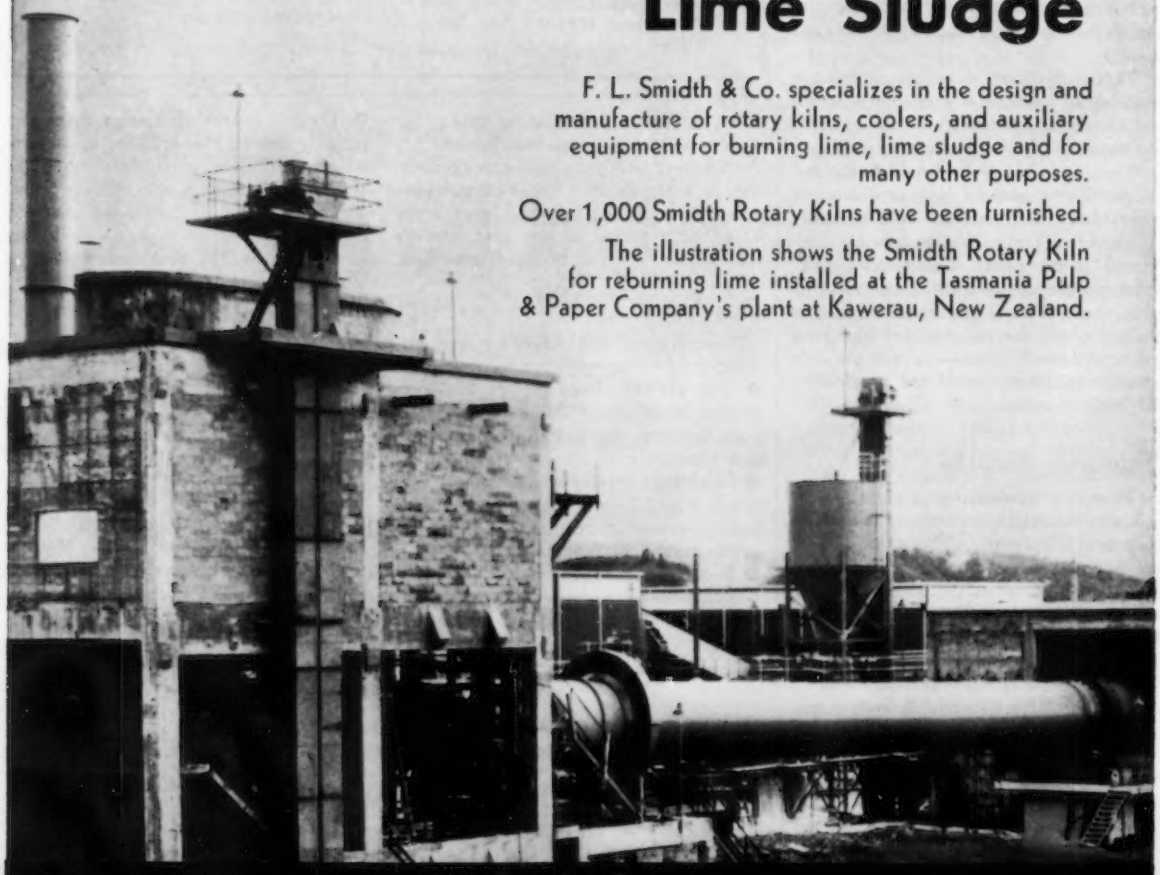
SMIDTH
Rotary Kilns
For reburning Lime Sludge

F. L. Smidth & Co. specializes in the design and manufacture of rotary kilns, coolers, and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,000 Smidth Rotary Kilns have been furnished.

The illustration shows the Smidth Rotary Kiln for reburning lime installed at the Tasmania Pulp & Paper Company's plant at Kawerau, New Zealand.



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New Method of Increasing Drying Capacity of Paper Machinery

Odd Hultgreen

President, Converters Machine Co.

A new compact design of electric infra-red heating oven has many advantages for paper machines and converting equipment.

The results of research and actual installations during the last few years in various paper mills, especially in Europe, show that the use of radiant energy in combination with conventional drying systems, not only has been able to increase the drying capacity of paper machines but also has improved the quality of the paper.

Theory

Infra-red heating ovens of a new, very compact design can now be installed as a booster for existing drying equipment. With this method costly outlays for additional drying cylinders and long shutdown of production are avoided. The installation of infra-red heating ovens takes only a few hours. It is of great importance that the right spot is selected for the installation of the heating ovens because the relative efficiency of radiant energy to contactor convection heat varies a great deal through the drying section.

Figure 1, from the book "Infrarottecnnik", 1954, by Dr. Rudolf Borchert and Dr. Werner Jubitz, shows clearly how much more efficient radiant energy is when used to evaporate water from fibrous materials than contact or convection heat. Radiant energy will evaporate the same amount of water per kw.h. in the beginning, in the middle and at the end of the machine. The electromagnetic waves are absorbed by the atoms of the water which are thus heated from the inside, so that the proportion of water to fiber does not make any difference in drying efficiency.

When contact or convection heating methods, are used efficiency of the drying equipment varies very much in the different stages of drying. At the beginning efficiency will be low because the material has to be heated completely through before any evaporation takes place. According to research by von-Beslepsck-Valendas, approximately 21 per cent of the energy is used to evaporate seven per cent of the water at this point. In the middle of the drying stage, contact or convection heat has high drying efficiency, equivalent to the efficiency of radiant energy. However, as the sheet becomes nearly dried, the efficiency of conventional drying methods is very low. According to vonBeslepsck-Valendas, approximately 29 per cent of the energy is used to evaporate six per cent of the water by the end of the drying process. This means that in order to remove the required amount of water from the paper, the heat on the surface may be so high as to damage the fibers on the surface.

The most efficient place to use radiant energy in paper production is in the press section of the machine.

Dr. Rudolf Borchert and Dr. Werner Jubitz, make the following statement in their book (p. 153):

> "When radiant energy is used in drying paper it is important to know that the temperature during the major part of the drying process is hardly over 160°F. The fiber can therefore not be overdried and brittle when this process is used.

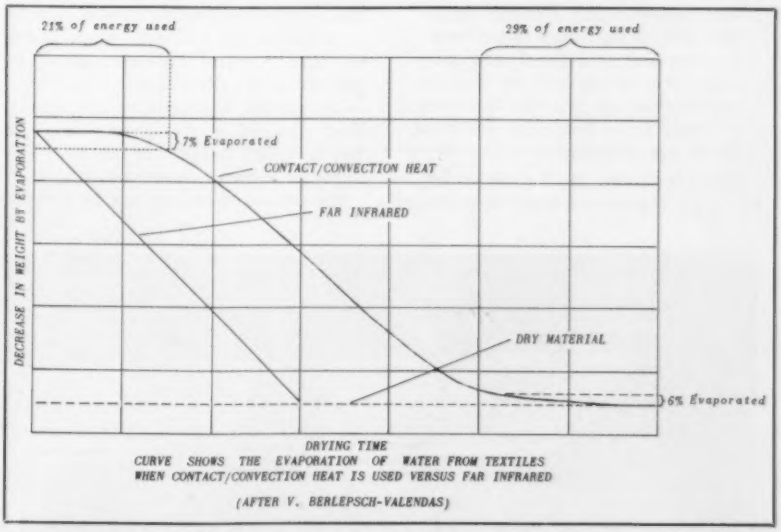


FIGURE 1—EFFICIENCY OF RADIANT ENERGY for drying as compared with contact or convection heat.

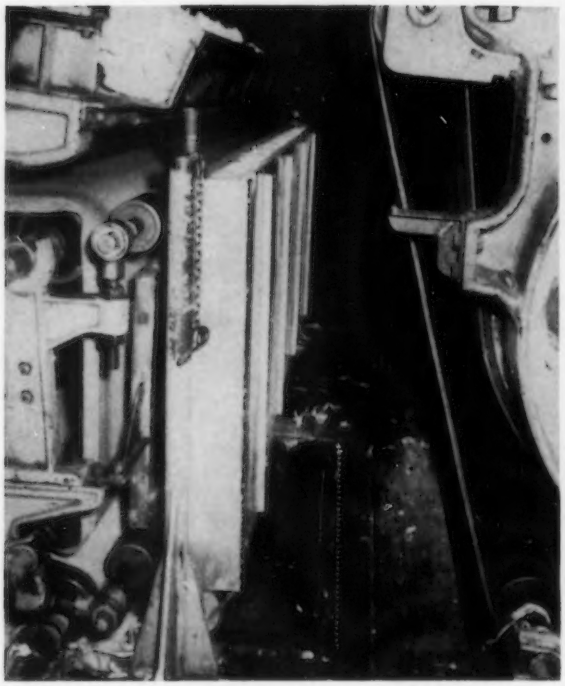


FIGURE 2—CERAMIC INFRA-RED HEATERS in position on a Norwegian Machine.

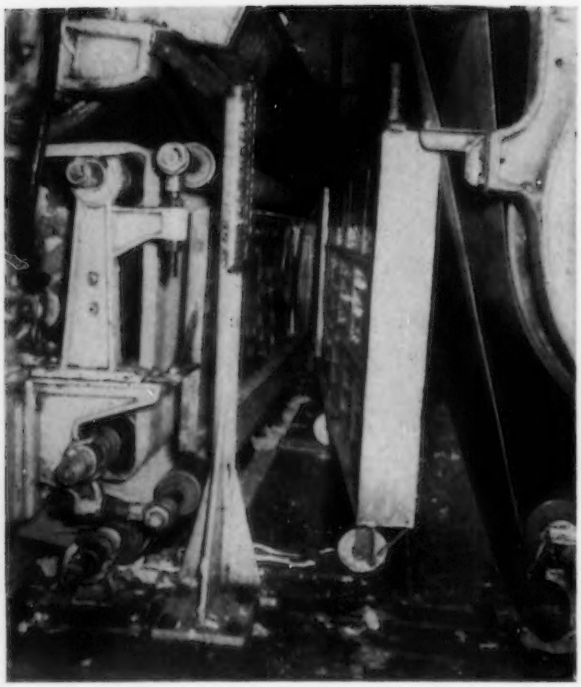


FIGURE 3—HEATERS RETRACTED to permit threading on the same machine.

The heat is evenly distributed all through the web. With contact heat the surface of the web can be overheated when moisture is still inside the web. The installation of infra-red heating ovens in the press section of paper machines has proved successful. Radiant energy can be concentrated there in such a way at selected spots in the press section that the water in the web can be heated even when the web is running at high speed. Through the rising of the temperature of the water, the viscosity is lowered and more water can be pressed out at lower temperatures. In this case the water has only to be heated to reach an effect, not evaporated."

The conclusion is that in order to reach the highest efficiency in a limited space, at a reasonable cost, radiant energy should be applied at the beginning, and in some cases also at the end of the conventional dryer section, whereas conventional heating methods should be used in the middle of the drying process.

New Equipment

The Liica Infra-Air drying system uses extremely compact drying ovens, as small as 5 x 7 inches in cross section. The system incorporates Elstern ceramic infra-red heating elements in six standard sizes, with an emission rate of 95 per cent of electrical input.

The electric heating wire is a special alloy enclosed in the ceramic body so that it cannot oxidize, or be short circuited by water or other causes.

The ceramic elements can be sprayed with water when hot and they will not break. They are interchangeable and low cost.

Mill Experience

Success of the above theory and equipment has been proved in several paper mills in Europe where excellent results have been obtained. Installation of radiant heating units at the wet end of paper machines has proved very successful. Although quite a few paper mills have made such installations it has been very difficult to get facts for publication. By courtesy of the technical research department of Drammenselvens Paperfabriken, one of the leading Norwegian paper companies, I am able to publish the results obtained with an installation made on a greaseproof machine in Norway about twelve months ago.

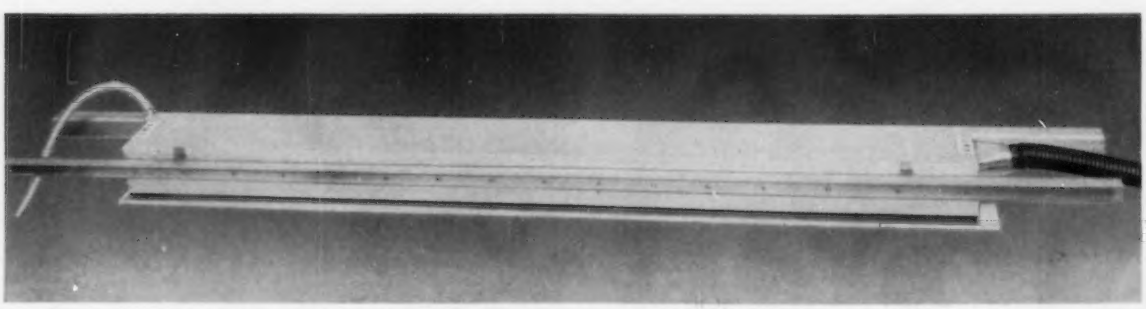


FIGURE 4—NEW COMPACT DRYING OVENS are much smaller than those shown above.

FIG. NO.5 INFRARED HEATING OVENS AFTER SIZE PRESS

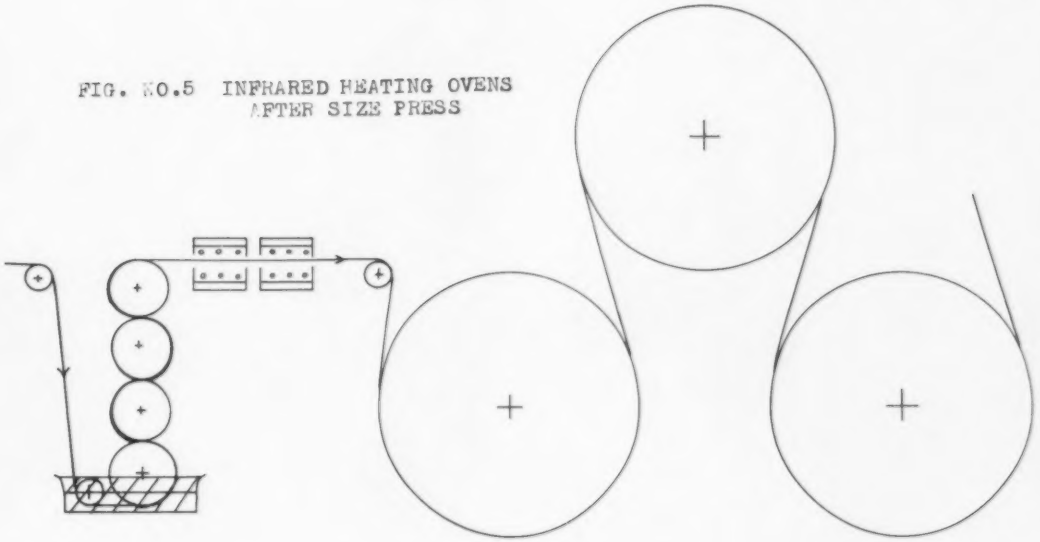


FIG. NO.6 INFRARED HEATING OVENS AT BOARD CALENDERS

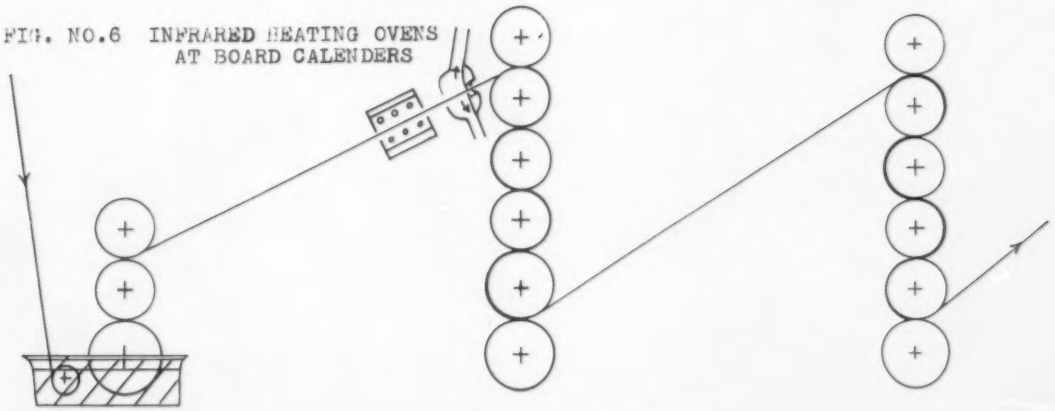


FIG. NO.7 INFRARED HEATING OVENS ON COATING MACHINE

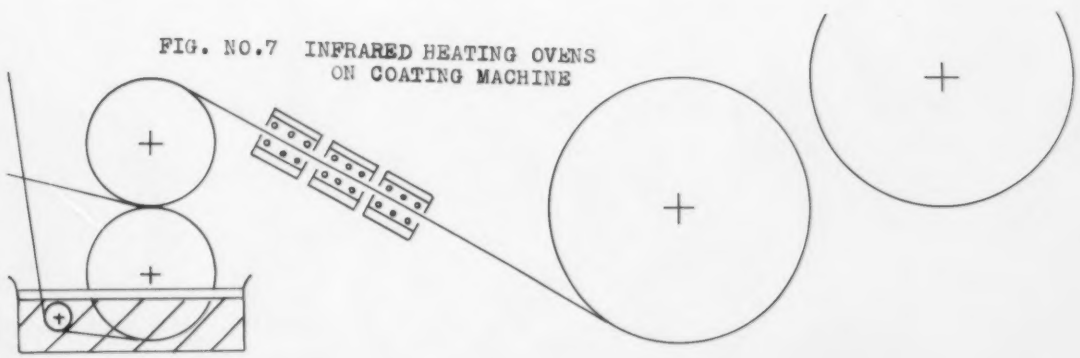


TABLE I

RESULTS FROM INSTALLATION OF 45KW. UNIT ON A 114" GREASEPROOF MACHINE

Sample No.:	1	2	3	4	5	6	7	8	9	10	
Dryness after 34d press in	%	%	%	%	%	%	%	%	%	%	
With use of radiant energy:	23	23	22.7	23.8	23.4	23	23.9	22.4	23.6	23.9	—23.27%
Without radiant energy:	20.8	20.8	20.8	19.2	21.6	21.4	21.3	21.3	21.3	22	—21.05%

Increase of Dryness by radiant heat— 2.22%

Figures 2 and 3 show how the installation was made. Ceramic infra-red heating elements 10 inches long, each 500 watts, were placed in seven rows in a housing of reflecting aluminum. The surface temperature of the elements was 680°C-1250°F and the emission of radiant energy had a maximum at three (microns). The total installation amounted to 45 kw. The heating oven was hinged in the back side and had a supporting wheel in front in order to enable the workers to move the oven when the paper had to be threaded.

New methods of building the ovens and mounting the ceramic heating elements have made it possible to construct smaller compact ovens 5 x 7" where up to 45 watts/sq.in. can be emitted, as shown in Figure 4.

Results

The data below is the result of check-up made in October 1955:

Grade Produced: Bleached Greaseproof

Substance: 40 Gr/M² = 25 lbs/Ream of 3000 sq. ft.

Width of Machine: 2900 mm = 114"

Speed of Machine: 90 m/min. = 300'/min.

In this way the space required for the infra-red heating ovens is now only a third of what is shown in Figures 2 and 3. Depending on length of oven and space available, the oven can be moved away from the web by a mechanical or automatically operated hinging arrangement or by using a hydraulic lifting device.

The dry weight of paper leaving the press was 19 per cent. 40 Gr./M.² of fiber at this point carried 170 gr. water/M.², giving a total weight of 210 gr./M.² and a production of 3300 kos/hour. The temperature of the web was increased by 60°C when the infra-red heating ovens were used, which means that 19800 CAL were absorbed by the material. 45 kw. at 860 CAL. means 38500 CAL. total installation. The efficiency of the heating ovens there was 52½ per cent. Other benefits were obtained from the use of the infra-red heating ovens. The felts were dryer and ran longer.

The actual savings realized from this installation can be calculated as shown in Table II, ignoring the value of raising the temperature of the fibers:

An installation of 45 kw. of radiant energy giving 38,500 CAL. with a 52½ per cent efficiency at the wet end of the process saved 196,000 CAL. in the dryer section, where the efficiency is far less than 52½ per cent, so the actual savings are much higher.

Infra-red heating ovens installed at all the presses would have given an even greater effect per kw. installed, than when only one press is equipped in such a way.

Conclusions

From the results obtained, we can draw the following conclusions: Where electricity is cheap or where space is limited, the installation of radiant heating ovens at the wet end of the paper or board machine will give very good results for the money invested and the space required. The installation of radiant heating ovens after size presses (Figure 5), between board calenders (Figure 6) or for drying of clay coatings (Figure 7) would be highly efficient. Infra-red heating ovens have also been installed to act as a booster for felt dryers, and up to 30 per cent higher drying capacity has been reached.

There is no doubt that an intelligent use of radiant energy in the paper industry will enable existing machines to run with higher speed and efficiency without costly shut-downs or rebuilding. I am quite confident that future paper machines will use radiant heating ovens as a complementary heating equipment in the press section, or felt dryers, and in the sizing and coating and calendering section because such installation hardly takes any space and, mounted in the proper place, will have higher efficiency than any other heating system. Standard size ceramic heating elements with a given capacity emitting the energy in a known band of waves, have made it possible to construct ovens which can be used anywhere on the paper machine.

TABLE II

SAVINGS FROM THE INSTALLATION

Before installation: 21% dry after 3rd press
1) Production: 3000 kos/hour = 625 kos of fiber and 2375 kos of water
After installation: 23.2% dry after 3rd press
2) Production: 2705 kos/hour = 625 kos of fiber and 2080 kos of water

1) Heating	2375 kos of water from 20°C to 100°C = ...	190,000 CAL
Evaporating	2375 kos of water at 539/CAL/kos = ...	1,280,000 CAL
Amount of calories used in drying section = ...		1,470,000 CAL
2) Heating	2080 kos of water from 26°C to 100°C = ...	154,000 CAL
Evaporating	2080 kos of water at 539 CAL/kos = ...	1,120,000 CAL
Amount of calories used in drying section = ...		1,274,000 CAL

1) 1,470,000 CAL
2) 1,274,000 CAL

Savings 195,000 CAL = 13¼%

First in the South!

New Lockport Felt Mill at Starkville, Miss.

- PLANNED IN 1953
- GROUND BROKEN IN 1954
- COMPLETED IN 1955
- PRODUCED TENAX FELTS IN 1955

Years-ahead Service to the Paper Industry

Keeping ahead of the paper industry's needs is a basic policy at Lockport Felt. After World War II, when paper concentrated 90% of its expansion in the Southern United States, Lockport turned its sights there, too. Now, the task of providing a new TENAX FELT Mill in the South is completed. The first paper machine felt ever woven in the South was delivered from the Starkville Mill in December of 1955.

Lockport is proud of this "first" . . . of this new ability to offer faster, more direct, more efficient service to the Southern paper industry. Starkville benefits all papermakers, by freeing production capacity at the Newfane Mill. Recently expanded, with new equipment in many departments, the Newfane Mill is providing better-than-ever service to paper and board makers everywhere in the world.

LOCKPORT FELT COMPANY

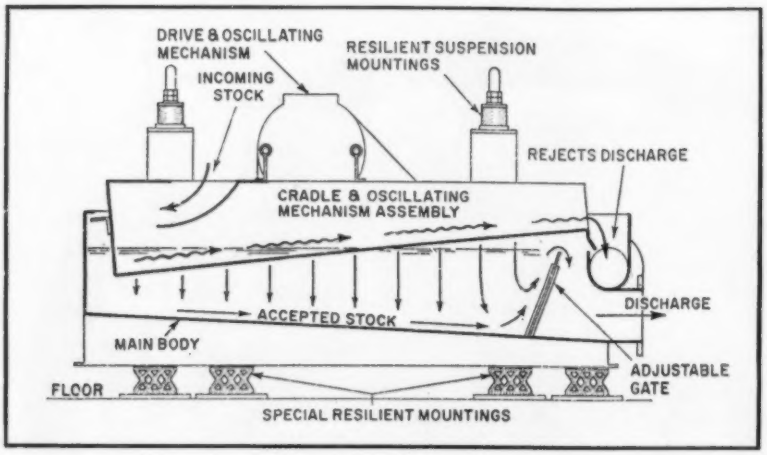
NEWFANE, NEW YORK STARKVILLE, MISSISSIPPI

Serving the Paper Makers Since 1891

TENAX FELTS

NEW EQUIPMENT

AND SUPPLIES



Pulp and Stock Screen Operates With Gentle Vibration

Black-Clawson Co. is now offering the Gyro-Flote screen for fiber screening in both pulp mills and paper mills. Special design of the screen makes it oscillate on the gyroscopic principle which is said to make for gentle but effective screening action in place of severe screening vibration normally expected in these types of screen. Inquiries or pulp mill applications are directed to B-C's Pandia Division, 250 Park Ave., New York 17, N. Y. Paper mill applications will be handled by the Shartle Division, Middletown, Ohio.

In groundwood systems, the screen can serve as a bull screen and as a tailing screen. In chemical and semichemical pulp systems, it is offered as a knotter or as a tailing screen, and also as a primary screen after the washers.

The screen works as follows:

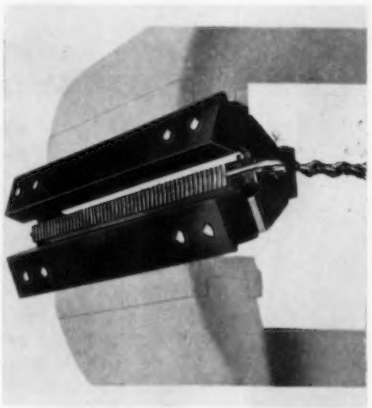
The inclined screen-plate, cradle and oscillating mechanism comprises a single unit suspended in the main body of the screen.

Stock to be screened is admitted at the submerged low end of the inclined plate. Vigorous, short stroke oscillation forces the stock to advance upward on the inclined perforated screen plate.

All usable papermaking fibres are recovered by gentle washing action. Unusable material is rejected in a semi-dry mass from the top lip of the screen plate. Shower or screw-type reject mechanism are available.

The manufacturer explains that very little vibration and shock is ever transmitted to the main screen body or to the connected pipings, floors, or foundations. Even the slight vibration is isolated through the use of resilient mountings. Also noted is the fact that it can sit on any reasonably strong floor.

The capacity of the Gyro-Flote depends on the application and the size of the perforation.



Vise Lacer for Small Hooks

A vise lacer, designed expressly for belt hooks used to lace belts from .060" to .156" thick, is now being produced by Clipper Belt Lacer Co., Grand Rapids, Mich. It can be used in any standard vise 4" or larger.

The hook retainer on the new vise lacer has 50 slots to accommodate the standard 50-hook card of the No. 1, 1-A and 1-D hooks. The No. 1 hook is for belts .126" to .156" thick, the 1-A hook is for belts .086" to .125" thick and 1-D hook is for belts .060" to .085" thick. Lacing wide belts with these hooks previously required a special hook adapter for regular belt lacers. The new vise lacer is the first one produced by Clipper that will accommodate the full 50-hook card.

The new model, designed the No. 1-6" Vise Lacer, will make for easier servicing of belts on machines such as the Allis-Chalmers forage blower that has a 15-¼" belt .070" thick, and the American Foundry & Machine Co. automatic pin setters that have a 4-inch belt .125" thick. The new lacer sells for $9.50.

New Antimicrobial

ASC-4, a recently developed bactericide and fungicide manufactured by Stecker Chemicals, Inc., Ridgewood, N. J. should be of particular interest because of its unique properties.

When minute quantities of ASC-4 are added to a mill system at the beater or hydrapulper the product attaches itself to the cellulose fibers with the effect that the resulting paper will inhibit or prevent the growth of microorganisms in a large variety of paper product applications.

Tissue, kraft, wet-strength creped towelling, wadding and a variety of coated papers have been treated successfully in this manner with this relatively non-toxic product.

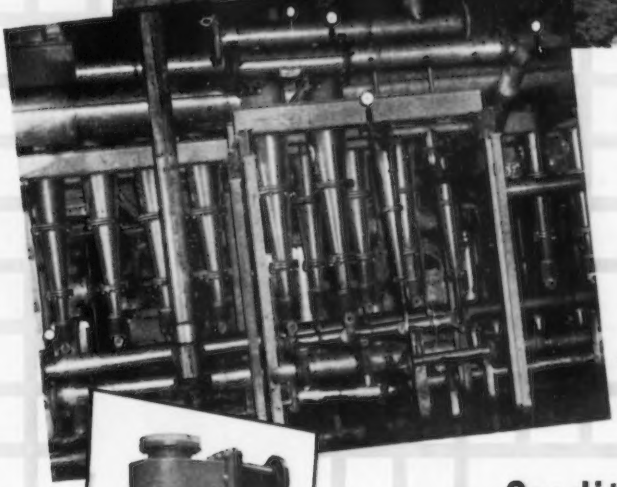
High-Lift Hand Truck

A lifting height of 51½ through 70½ inches, a downheight of 6½ or 10½ inches and quick accessibility for maintenance are offered in a new two ton capacity battery powered hand truck in two models, which are the latest additions to the "Powrworker" line of the Industrial Truck Division of Clark Equipment Co., Battle Creek, Mich.

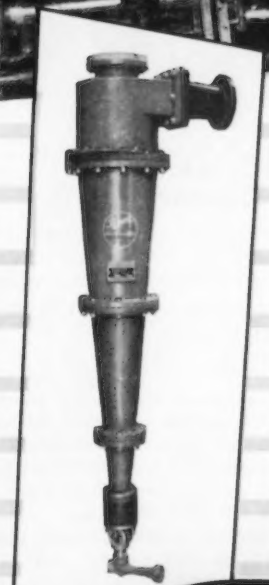
Named the "Hi-Lift Platform", the truck travels at 3 m.p.h. empty and 2.2 m.p.h. fully loaded, in both forward and reverse. Full-load lifting speed is 9 feet per minute and lowering speed is 20 feet per minute. Lowering speed is hydraulically adjusted to weight carried. A spool-type lift control valve provides full "feather action". A built-in pressure relief valve automatically protects the hydraulic system against excessive pressures.

"Dead man" brakes are included on the platform. The brake is spring applied when the steering handle is in a vertical or horizontal position. As the brake is applied a "dead man" switch is actuated which automatically breaks the power circuit. It is impossible to operate the truck with the handle in these positions. The handle automatically returns to the vertical position when released by the operator.

Plant of Chase Bag Company, at Chagrin Falls. Since 1848, producers of high quality kraft converting papers, including spinning, twisting, interleaving, and machine creped grades.



Bauer Pulp Cleaners at Chase Bag Company



Credits *BAUER CLEANERS* for cleanest kraft ever seen . . .

Sixteen Bauer Cleaners at Chase Bag Company Chagrin Falls, Ohio, are providing an extremely clean sheet.

"The Bauer Cleaners are doing a marvelous job," says General Manager J. A. Extrom. "I personally have never seen as clean a paper produced by any kraft mill as we have been making since the Bauer Cleaners have been in full operation."

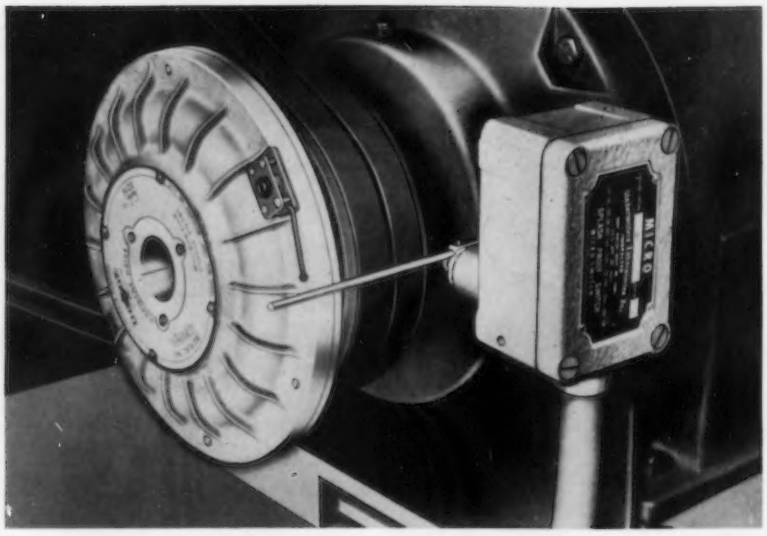
General Superintendent Ralph Pierson states that, among other savings, wire life on their machines has been greatly extended by Bauer Cleaners' removal of sand and grit along with shives, bark, slivers, etc., from the stock.

Get the full story on Bauer Cleaners. Send for bulletin.

Bauer

THE BAUER BROS. CO.

1758 SHERIDAN AVE. • SPRINGFIELD, OHIO



Thermal Cutout for Dry Fluid Drive

Protection against overheating of Flexidyne, the dry fluid drive, is provided by a thermal cutout now available from the Dodge Manufacturing Corp., Mishawaka, Ind., manufacturers of Flexidyne. Instantaneous mechanical overload protection is inherent in the Flexidyne unit. Now, if an overload causes prolonged slipping and consequent heating of the Flexidyne, the thermal cutout trips the switch, cutting off the power and, if desired, giving an alarm.

The new cutout is recommended especially for all unattended installations. The device is said to be easy to mount on the side of the Flexidyne. It contains a trigger spring, held down by an alloy thermal pin. Before the Flexidyne can heat up enough to cause any damage, the thermal pin will melt, allowing the trigger to spring out so that it will push the non-sparking striker of the special switch to the "off" position.

The unit is reset by removing one screw, pushing back the trigger and inserting a new thermal pin, and then reattaching to the Flexidyne with the single screw.

This is not and is under no circumstances to be construed as an offer to sell, or as an offer to buy, or as a solicitation of an offer to buy, any of the securities herein mentioned. The offering is made only by the Prospectus.

NEW ISSUE

April 5, 1956

123,046 Shares

United States Envelope Company

Common Stock

$10 Par Value

The Company is issuing to the holders of its Common Stock rights to subscribe for one additional share for each four shares held of record at the close of business on April 4, 1956. The rights will expire at 3:30 P.M., E.S.T. on April 17, 1956. During and after the subscription period, the Underwriters may offer shares of Common Stock, as is more fully set forth in the Prospectus.

Subscription Price to Warrant Holders
$20.25 Per Share

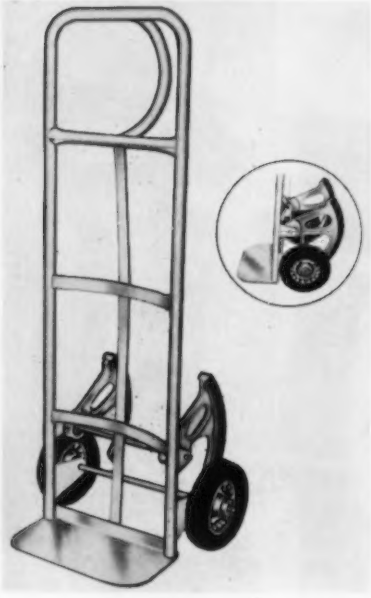
Copies of the Prospectus may be obtained in any state only from such of the underwriters, including the undersigned, as may legally offer these Securities under the securities laws of such State.

Hayden, Stone & Co.

The First Boston Corporation — Goldman, Sachs & Co.

Harriman Ripley & Co. Incorporated — Lehman Brothers — Smith, Barney & Co.

Hornblower & Weeks



Hand Truck Is Stair-Climber

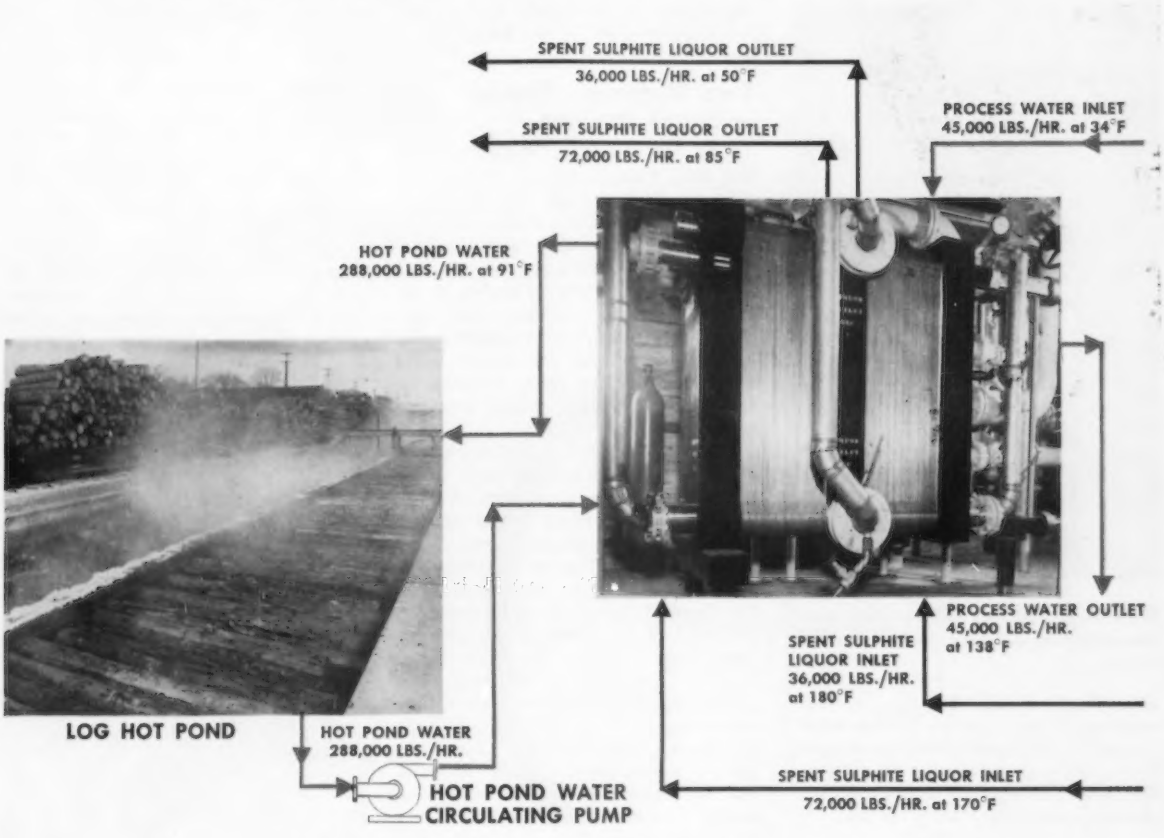
Production of an unusual stair climbing hand truck, designed for firms who find it necessary to drag loads over curbs and up and down stairways, is announced by Precision Equipment Co., 3716 Milwaukee Ave., Chicago 41, Ill.

Two rocker-arms act like an extra pair of wheels on the product, which is called E-Z climber, and keep the truck on a constant line for friction-free travel. Its size and superb maneuverability make it ideally suited even where there are doorway and aisle limitations.

The product is strongly built with a heavy one in. O.D. tubular steel frame, electrically welded for rigidity, with curved cross members. The 9 in. x 14 in. W nose-plate is of heavy 3/16 in. steel. The unit has a reinforced base plate beam, and semi-pneumatic, 10 in. x 2.75 in., steel disc wheels. Load capacity is 600 lbs. Overall size 46 in. H x 18¾ in. W. Shipping weight is 39 lbs.

10,800,000 BTU PER HOUR RECOVERED FROM SPENT SULPHITE LIQUOR...

First installation of its type in U. S.... De Laval Plate Heat Exchanger uses "waste heat" to heat soaking pond water and preheat process water at Wisconsin Rapids, Wis., plant of Consolidated Water Power & Paper Co.



The De Laval Plate Heat Exchanger at the Consolidated plant consists of two separate sections in one frame.

The first section recovers approximately 6,120,000 BTU per hour from spent sulphite liquor to maintain the water temperature in the log soaking pond at 91°F by continuous recirculation... *eliminating the expensive and inefficient method of blowing live steam into the pond.*

The second section uses 180°F spent sulphite liquor to preheat 45,000 lbs. of process water per hour from 34°F to 138°F... recovering approximately 4,680,000 BTU per hour.

●

De Laval will gladly show you how De Laval Plate Heat Exchangers can be used to save money, increase profits in your plant.

DE LAVAL
plate heat exchangers

THE DE LAVAL SEPARATOR COMPANY Poughkeepsie, New York • 427 Randolph St., Chicago 6 • DE LAVAL PACIFIC CO. 201 E. Millbrae Ave., Millbrae, Calif.

RECIPE for SAVINGS on PIPING LAYOUTS

Here's a proved way to save time, labor and material on your piping requirements:

Take Naylor Spiralweld pipe for easy handling . . . add accurate Naylor fabrications to eliminate numerous flanged joints and you come out with a piping layout that's simpler to install and costs you less money right down the line.

Naylor's fabrication service combines Naylor Spiralweld pipe with standard fittings or special fabrications in one integral unit, thus eliminating numerous flanged joints and cutting costs substantially. Naylor pipe sizes range in diameter from 4" to 30" with all types of fittings and connections. Both pipe and fittings are available in steel, alloys and stainless steel.

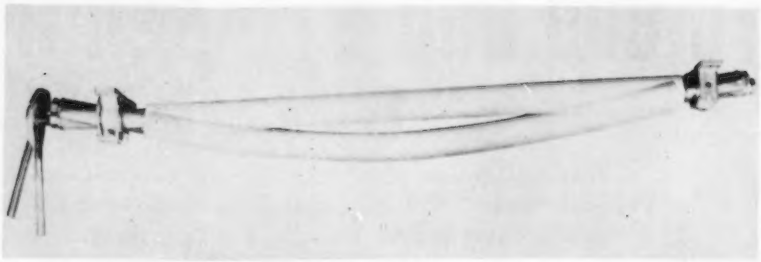
Write for Bulletins No. 507 and No. 525.

NAYLOR PIPE

NAYLOR PIPE COMPANY

1236 East 92nd St., Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office:
350 Madison Ave., New York 17, New York



THIS NEW 7" VARI-BOW EXPANDER which will handle sheet widths up to 210" has been developed by the Mount Hope Machinery Co.

Two Materials Trucks In Short Designs

Yale & Towne Mfg., Materials Handling Div., Philadelphia 15, Pa. has developed what it calls the industry's shortest sit-down electric lift truck, designed to meet the needs of the general warehouser. Overall length of this Yale K-51-AT truck is only 67 inches to the face of the fork carriage. This short dimension permits operation comfortably in space saving aisles as narrow as 10 feet 6 inches. The truck is being introduced in a 4000 pound capacity model.

Under load, the truck can make speeds of from 5½ to 6 miles per hour. Loads can be lifted at speeds of from 25 to 30 feet per minute. Forks empty can be raised at 45 to 50 feet per minute.

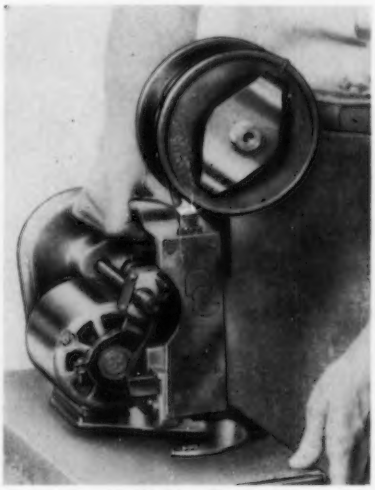
Yale & Towne has also developed a new Worksaver pallet truck with short lost length, increased underclearance, and what is described as an exclusive "breakaway" feature for easy maintenance. Available in 4000 and 6000 pound capacities the new Yale Worksavers can be fitted with two different size battery compartments. The short battery compartment models fit a 6 cell 13 plate battery (or comparative nickel alkaline model) and are only 24 inches longer than the load. The larger model takes a 6 cell 25 plate battery for extra rugged all day service and is just 33 inches longer than the load. The "breakaway" feature permits the whole front of the truck to open away from the battery compartment making every hydraulic and mechanical unit immediately accessible for service.

Single-Masted Lift Truck For Indoors and Outdoors

The operating advantages of the Hyster Monomast lift truck are now available for the first time on a pneumatic-tired truck, the Hyster QN-20 of 2,000 lbs. capacity at 24" load centers. Hyster Co. is at 2902 N. E. Clackamas St., Portland 8, Ore.

The compact new truck is claimed to be an ideal "work horse" for both inside and outside production. Specific operating advantages, the result of single-upright "panoramic visibility," include faster load placement, reduced driver fatigue and greater safety. Rigidity and stability factors of the Hyster Monomast upright assembly are reported to be excellent.

The truck is powered by a heavy-duty air-colled Wisconsin gasoline engine and is equipped with pneumatic tires for dependable performance on all surface conditions.

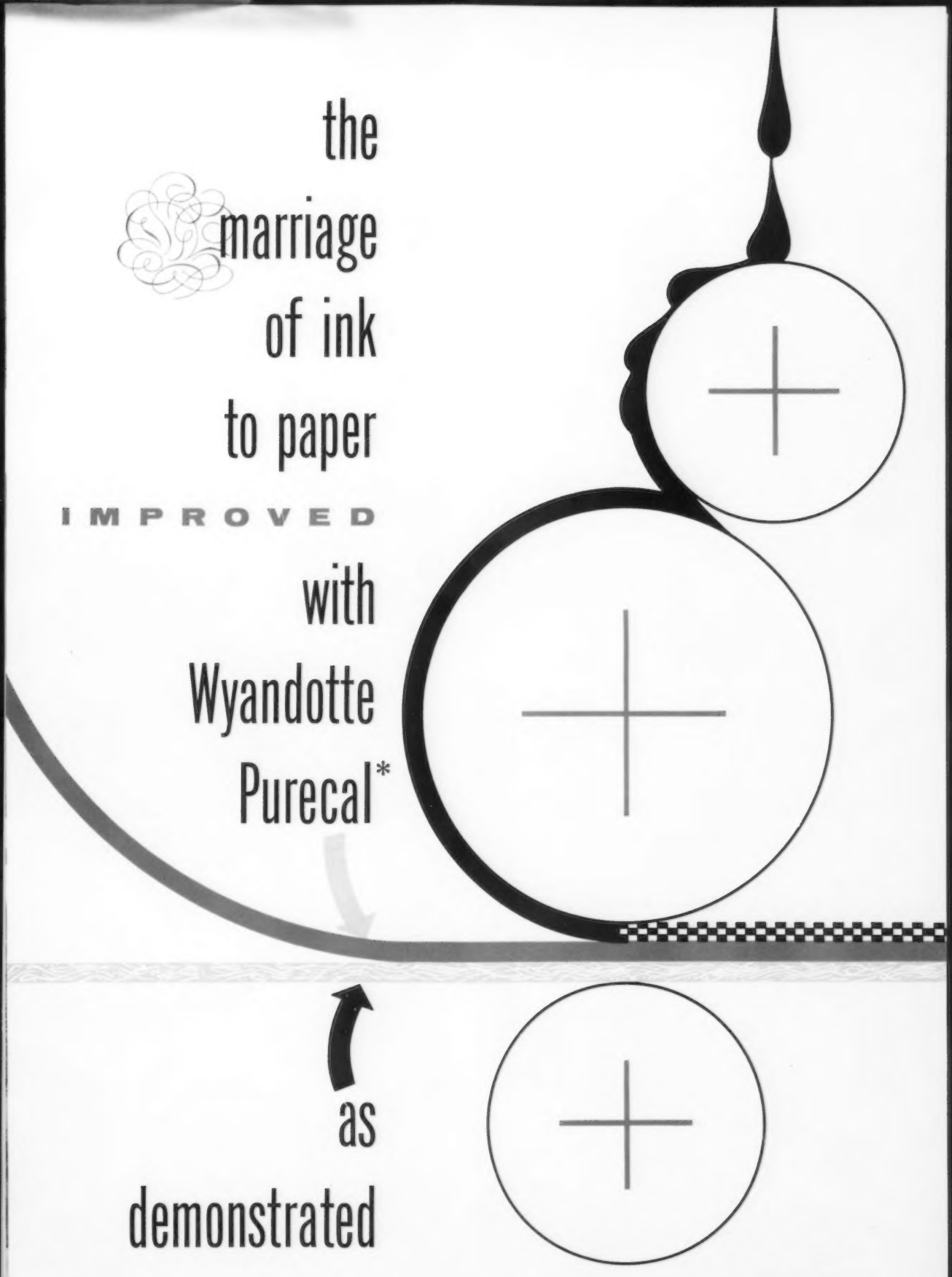


Portable Wire Stitcher

Ordnance Gauge Co., Hagert & Amber Sts., Philadelphia, Pa. reports its development of a new, light-weight portable wire stitcher which weighs but 15 pounds. Its use eliminates all need of lifting or carrying cartons to a stationary top sealer. This new portable stitcher performs, on filled or partially filled cartons, every conventional task done on far more costly pedestal stitchers.

A standard 5 lb. spool of .103x020 (or finer) ribbon wire is attached to this portable stitcher, supplying wire to form stitches at a lower cost than conventional staples or tape, it is said.

The "OG" makes about 200 stitches per minute on either single or double fluted board, as well as on fibre, wood or leather.



in black and white and four-color offset lithography · on 80-lb. Cellugloss Offset Enamel, made by St. Regis Paper Co.

*REG. U.S. PAT. OFF.

1 **Yellow—and the white of the paper.** The first color printed, the ink must be the tackiest, with each succeeding colored ink softer than the preceding one . . .

2 **Red.** Thus, with the proper "tack" balance, each successive ink application is transferred to the paper instead of liftin the preceding color from the paper . . .

4 **Blue.** Therefore, the coating must be bound to the paper with a proper adhesive, so that it will not be pulled off by tacky inks—or water used in the offset process . . .

5 **Yellow and Blue.** Clay is a major component in coated papers. But, being a natural-occurring substance, impurities and variables are usually present . . .

7 **Black—the key plate (detail-and-definition plate).** Wyandotte's Purecal has proved to be the ideal answer for brighter coated stocks, and better ink receptivity . . .

8 **Yellow and Black—to double-check register.** For Purecal is absorptive in nature. And, in addition, it levels well. Paper's hills and valleys are smoothed out . . .

3 **Yellow and Red.** Screens for individual colors are rotated in camera at different angles; magnified view would show dots print side-by-side, with some overlapping . . .

6 **Yellow, Red, and Blue.** What's more, with improved printing processes, clay alone lacks much in brightness necessary for sharp, contrasty impressions . . .

9 **Yellow, Red, and Black.** Purecal's unusual whiteness and hiding power lend a crispness to all the printing processes unmatched by any other coating material . . .

finished proof

10 **Three colors plus Black, on White . . .** produced in a matter of seconds by the offset process on coated stock made with Wyandotte Purecal—a faithful, sparkling reproduction.

From WILLIAMSBURG IN COLOR. *By permission.*

Coated stocks made with Purecal are brighter, accept ink better

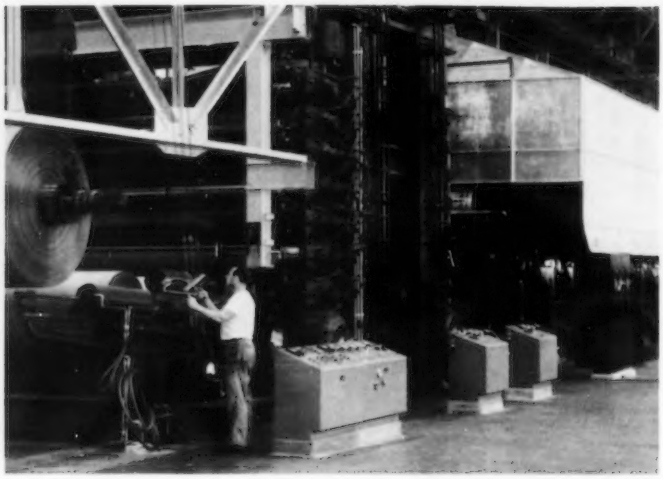
No doubt you've already rubbed this piece of Purecal-coated stock between thumb and forefinger—or, perhaps, held it up to the light—to test its smoothness.

Now observe, in various stages of proofing, how this smoothness, along with its bright color, work together to produce sparkling, lifelike reproduction of full-color copy. For this is the crucial test of any fine paper.

Purecal—Wyandotte's precipitated calcium carbonate—is uniform in particle size, and exceptionally pure; free from all grit and abrasive material that might harm printers' rolls or printing plates. It is exceptionally white, with dry hiding power that lends a high degree of opacity to the coated sheet. And Purecal definitely improves ink receptivity.

It is significant that so many of the finest offset *and* letterpress jobs in America are being done on Purecal-coated stock. We sincerely believe that this visual demonstration goes a long way to explain why.

Cellugloss Offset Enamel provides high brightness, good color; assures maximum contrast between ink and paper



Good printing starts with good paper

CELLUGLOSS OFFSET ENAMEL is accepted by lithographers throughout the country as an outstanding sheet. For it has great strength and versatility; and its bright, smooth surface is highly compatible with the offset process.

With its high brightness and good color, Cellugloss provides maximum contrast between paper and ink . . . enhancing the attractiveness of beautiful illustrations, and assuring topnotch reproduction in either black on white or full color.

Because it has a plasticized surface with a uniform density, each dot of heavy as well as light tone value reproduces with a minimum of lateral absorption. Its inertness—due to the types of pulps used—assures dimensional stability, which is so important to the lithographer or printer.

Although specifically designed for offset work, Cellugloss Offset Enamel performs efficiently in letterpress printing—with both semi-gloss and gloss inks. Thus, it can also be used to advantage in combination jobs, where both letterpress and offset lithography are produced on a single sheet.

—ST. REGIS PAPER COMPANY

Wyandotte products for the paper industry

PURECAL*—a pigment of highest purity. Purecal assures a uniform, smooth coating of high whiteness and hiding power, maximum production rates.

SODA ASH—Highly uniform; many grades. Let Wyandotte Technical Service explain how you can adapt your processes to produce your own sulphite liquor at a saving!

CAUSTIC SODA—Our liquid caustic may save you time and labor in handling, storage, use. Caustic bleach foams less than lime bleaches, lowering chlorine losses, speeding draining and drying.

CHLORINE—Investigate our liquid chlorine for bleaching and bleaching compounds, for direct chlorination of wood and wastepaper pulps, and as a reagent. Tested shipping methods ensure purity on arrival.

KREELON*—Wyandotte's alkylarylsulfonate. Highly soluble; gives fast, effective wetting; increases absorbency of tissue and blotting paper In proper formulation it can improve the deinking of wastepaper 10–20%.

PLURONICS*—The only 100%-active flake nonionic surfactant. Mill evaluations show Pluronic F68 improves absorbency and softness of paper towels; increases life of felts as much as 100%; is an excellent paper softener, resulting in greater crease strength.

CARBOSE*—Improves grease resistance and filler retention; increases surface strength and erasability; aids in deflocculation of pulp. Carbose VL (lowest viscosity sodium CMC) is excellent applied at the calender stack.

LITHO IN U.S.A. *REG. U.S. PAT. OFF.

Wyandotte
REG. U.S. PAT. OFF.
CHEMICALS

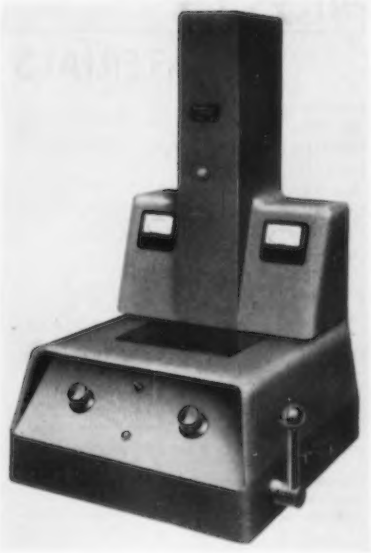
WYANDOTTE CHEMICALS CORPORATION,
WYANDOTTE, MICHIGAN.
OFFICES IN PRINCIPAL CITIES.

PAPER: *Cellugloss Offset Enamel, 80-lb., manufactured by St. Regis Paper Company at their Kalamazoo mill. Coating contains Wyandotte Purecal.*

PROCESS: *Two-color and four-color offset lithography.*

CENTER-SPREAD PHOTOGRAPH: "*Looking out of the Raleigh Tavern yard*" *in Colonial Williamsburg, Virginia. From* WILLIAMSBURG IN COLOR*—copyright, 1954, by Colonial Williamsburg, Inc.*

If you'd like samples of Purecal, and full technical data, write today on your letterhead to: Wyandotte Chemicals Corporation, Paper-Coating Section, Wyandotte, Michigan.



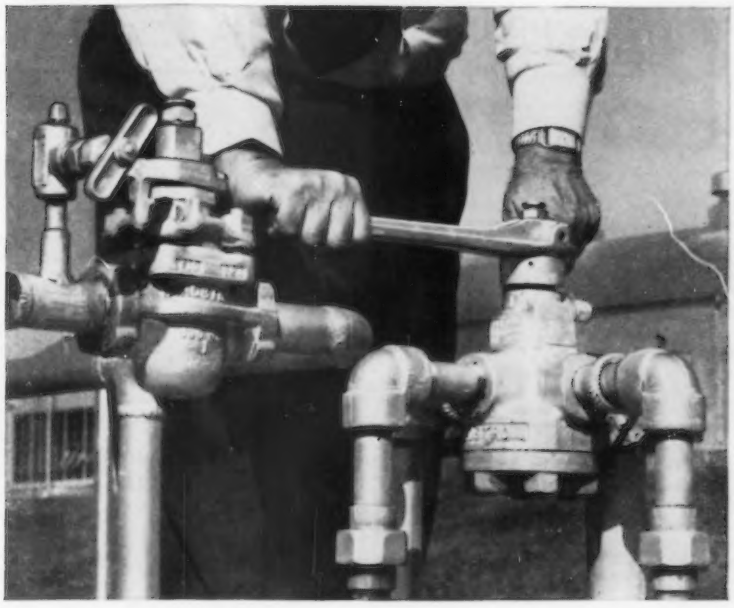
Fast-Operating Formation Tester

The Allegany Instrument Co., Cumberland, Md., has recently begun production of a new formation tester. The instrument measures structural variations in paper by passing a small, rapidly scanning beam of light through the specimen, electronically totalizing the beam intensity variation due to structural nonuniformities of the specimen. This electronic measurement is said to be extremely fast and sensitive, detecting in a few seconds formation variations indiscernible by eye. The beam scans the test area at 800 cycles in one direction and 30 cycles in the other, providing complete coverage of the area. This scanning area can be varied from ½ inch by ½ inch to 1½ by 1½ inches.

The tester features rapid operation by non-skilled personnel to minimize overhead costs. No special preparation of the test specimen is required. Any piece of paper larger than the area to be tested is inserted in the specimen slot; a clamp is then lowered and an opacity control adjusted. The formation value is then presented on a large, easily-read meter and computations are unnecessary.

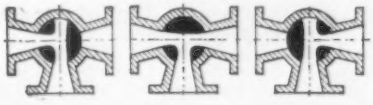
The instrument is housed in a rigid aluminum casting. The final design was established by operation of the prototype under actual plant conditions at a paper mill.

An accessory, the formation profiler, is available which will provide researchers with a visual indication of the formation of the area being tested, and also with an actual photograph of this indication for critical studies involving frequency factors of formation.



JUST ONE
Rockwell-Nordstrom Multiport Valve
Does the Work
of 2, 3 or 4 Ordinary Valves

For *multiple* flow control, you can switch from one line to another *instantly* by operating only *one* Multiport valve instead of 2, 3 or even 4 ordinary valves. Just three of the many possible switching combinations are diagrammed below.



In addition to original installation savings, Multiport valves continue to save because they're built to *stay* efficient. *Pressurized lubricant* forms a positive seal between the plug and body and also protects against corrosive-erosive elements. The seat is *never* exposed to the line fluid and the plug rides on a cushion of lubricant for *instant, quarter-turn* operation.

Rockwell-Nordstrom Multiport valves (and the complete line of *Straightway* patterns) are available in semi-steel, stainless steel, bronze and other corrosion resisting metals. Write for complete details: Rockwell Manufacturing Company, Pittsburgh 8, Pa. *Canadian Valve Licensee:* Peacock Brothers Limited.

Rockwell-Nordstrom Valves

LUBRICANT SEALED FOR POSITIVE SHUT-OFF

40th YEAR *of lubricated plug valve leadership*

PRICES OF FIBERS

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$$83.00/ 86.00§	$90.00/ —	$$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	$155.00/ —		$155.00/ —
Kraft, Blchd. Hdwd.	150.00/ —		$137.50/ —		
Kraft, Semi-bleached	140.00/145.00	135.00/140.00	$137.50/140.00§	*140.00/ —	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/145.00	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.25/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.50
Blchd. & Unblchd. Underwears	17.00/ 18.00
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.75/ 6.25
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.50
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	26.00/ 27.00

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	April 3 Per 100 lbs.
Grade 1 n.a.	$9.10/ $7.70
2	7.00/ 5.80
3 1st cut—felting	5.25/ 4.20
4	3.75/ 3.05
5	3.00/ 2.75
6	2.75/ —
7	

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Foreign Scrap Burlap	5.00/ 5.25
Heavy Wool Tares	6.50/ —
Foreign Manila Rope	6.50/ 6.75
Domestic Manila Rope	7.75/ 8.25
Domestic No. 1 Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

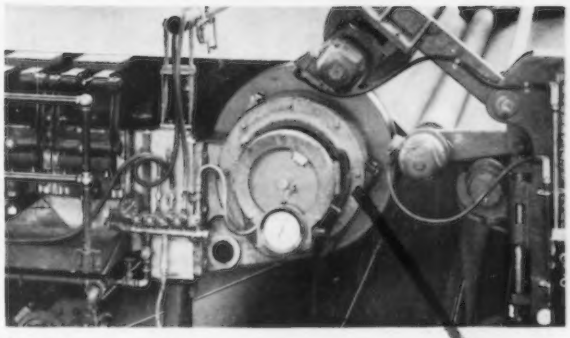
	New York	Boston	Chicago	Los Angeles
	April 9	April 9	April 9	April 9
No. 1 Mixed Paper	— / 14.00	— / 16.00	17.00/ —	14.00/ —
No. 1 News	21.00/ —	21.00/ —	18.00/ —	14.00/ —
Overissue News	26.00/ 29.00	21.00/ 25.00	23.00/ —	14.00/ —
Mill Wrappers	25.00/ —	21.00/ —	20.00/ —	14.00/ —
Old Corrugated Containers	27.00/ 30.00	26.00/ 27.00	30.00/ —	19.00/ —
Super Resorted Kraft Paper	40.00/ 50.00	45.00/ 50.00	45.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	45.00/ 47.00	45.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 52.50	47.50/ 52.50	50.00/ —	— / —
New 100% Kraft Corr. Cuts	55.00/ 65.00	55.00/ 65.00	75.00/ —	45.00/ —
New Br. Kraft. Env. Cuts	90.00/105.00	85.00/ 95.00	80.00/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	65.00/ 75.00	65.00/ 75.00	70.00/ —	60.00/ —
New Br. Kr. Bag Waste Unprntd	75.00/ 80.00	80.00/ 90.00	85.00/ —	— / —
No. 1 Groundwood Shvs.	45.00/ 50.00	35.00/ 45.00	40.00/ —	27.00/ 30.00
White Newsblanks	80.00/ 82.50	70.00/ 80.00	60.00/ —	65.00/ —
No. 1 Soft White Shvs.	90.00/100.00	80.00/ 85.00	80.00/ —	— / —
Hd. Whit. Shvs.	115.00/120.00	115.00/125.00	120.00/ —	105.00/ —
Hd. Wht. Env. Cuts	130.00/135.00	130.00/145.00	120.00/ —	120.00/ —
Col. Tab. Cards	75.00/ 80.00	75.00/ 77.00	65.00/ —	42.50/ —
Manila Tab. Cards, bales	100.00/110.00	95.00/102.00	95.00/ —	74.00/ —
No. 1 Col. Ledger	35.00/ 40.00	40.00/ 45.00	50.00/ —	32.50/ —
White Ledger	75.00/ 80.00	70.00/ 75.00	70.00/ —	50.00/ —
Mixed Book & Mag.†	28.00/ 29.00	30.00/ 32.00	25.50/ —	— / —
No. 1 Rep'd. Hvy. Books‡	33.00/ 35.00	33.00/ 35.00	37.50/ —	— / —

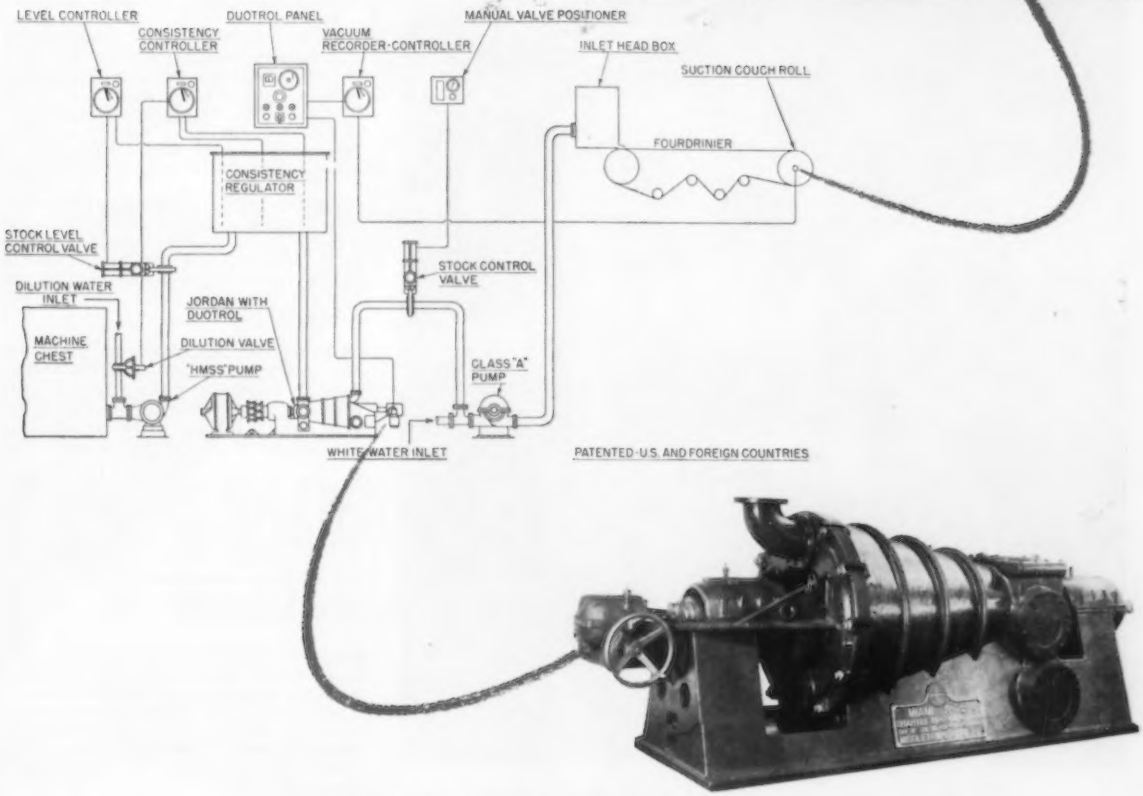
† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood. § Deld.

PRICES OF MATERIALS

Aluminum sulphate:		
cml bags, c.l. wks.	cwt.	$1.85 / —
iron-free, c.l. wks.	cwt.	3.55 / —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)		32.00 /35.00
Arg. ex. dock, duty paid		24.00 /25.00
New Zeal., do.		29.00 / —
Caustic soda:		
c.l. wks. solid, 76%	cwt.	4.10 / —
flak. & grd. 400-lb. drums, c.l.		4.50 / —
liquid 50% tanks		2.80 / —
liquid 70% tanks		2.90 / —
China clay:		
dom. air-float, c.l. (Geo. Wks.)	ton	10.00
water-washed, lump, filler,	ton	11.00
coating	ton	17.60 /40.00
Imported, ex. ship	short tons	20.00 /35.00
Chlorine:		
single-unit tanks, works	cwt.	3.05 / —
multiple unit, 2-5 cars per yr.		3.92 / 5.12
Formaldehyde:		
USP, inh. dms. c.l. wks.	lbs.	.0675/ —
lcl., E. wks.	lb.	.072 /.0725
Lime:		
hydrated (bulk, c.l.)	tons	18.71 /20.21
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	8.20 / 8.30
Rosin size:		
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	7.24 / 7.28
Salt cake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
imp. f.o.b. Saskatchewan	ton	18.00 / Cana. funds
Soda ash:		
light, 58%, bags, wks.	cwt.	1.80 / —
bulk	cwt.	1.50 / —
Sodium silicate, 40° Be.:		
tank-cars, wks.	cwt.	1.10 / —
drums, c.l. wks.	cwt.	1.45 / —
(47°) Be. WW.		
tank-cars, wks.	cwt.	1.75 / —
drums, c.l. wks.	cwt.	2.10 / —
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.186
l.c.l. (same basis)	lb.	.191 / .196
Soybean, protein:		
chem. isol., wks. c.l. bags	lb.	.23 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	cwt.	2.00 / —
l.c.l. wks.	cwt.	2.45 / —
tank-cars, wks.	ton	18.60 / —
Sulphur:		
crude, c.l. mines, contract,	long ton	26.50 / —
f.o.b. vessels Gulf	do.	28.00 /31.00
Sulphur dioxide:		
liquid, coml. cyl., wks.	lb.	.10 / .12
multi-unit cars, wks.	lb.	.0535/
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl	cwt.	6.39 / —
white, dextrins	cwt.	7.55 / 7.80
chlorinated	cwt.	8.15 / —
potato, Idaho, c.l. wks.	cwt.	6.00 / —
East, fr. all. 50 cents cwt.		
potato, Maine, f.o.b. wks.	cwt.	5.75 / —
Talc:		
domestic, sacks, (fibrous, grd.) c.l. wks., N.Y.	ton	27.00 /37.00
Titanium dioxide:		
anstase, c.l. deld. E. bags.	lb.	.22½/ —
l.c.l. deld.	lb.	.23½/ —
rutile, c.l. deld.	lb.	.26½/ —
l.c.l. deld.	lb.	.27½/ —

Let the Formation on the Wire Control Your Jordans





With this Black-Clawson system you can make the variations of the vacuum at the suction couch control your jordan plug settings automatically and maintain uniform stock treatment.

Duotrol* plug adjusters on your jordans are sensitive to changes in the vacuum caused by variations in fibre length and freeness of the stock being formed on the wire. The Duotrol units respond by automatically varying the jordan plug settings to compensate for these variations.

You can get a full explanation of the advantages of this system which is being successfully used in many mills. Contact the Shartle Division. *Trademark

The BLACK-CLAWSON Company

SHARTLE DIVISION • MIDDLETOWN, OHIO

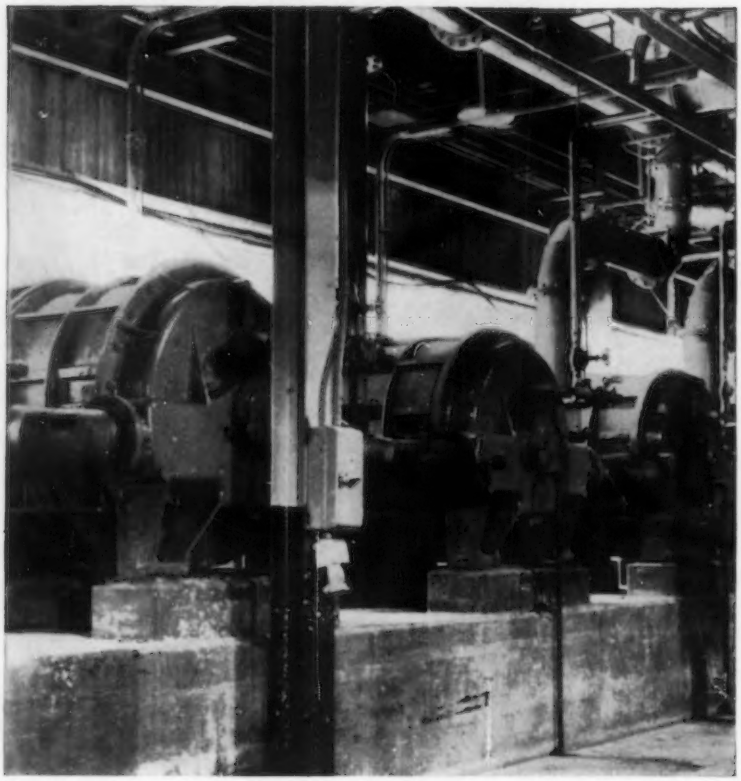
We look forward to greeting YOU at—

37TH ANNUAL CONVENTION

AMERICAN PULP and PAPER MILL SUPERINTENDENTS ASSOCIATION

JUNE 12 to 14
LAKE PLACID CLUB
ESSEX COUNTY, N.Y.

What, actually, do Vacuum Pumps on paper machines handle?



Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY

443 WILSON ROAD, SO. NORWALK, CONN.

NEW LITERATURE

CHEMICAL DEBARKING OF SOME PULPWOOD SPECIES. (60 p. Technical Report) Tells how forest industries may be able to improve their woodlands and save thousands of dollars each year while producing clean pulpwood. Price 60 cents. **Department of Forest Extension, State University of New York College of Forestry,** Syracuse 10, N.Y.

FIELDEN SERIES 80 DC AMPLIFIER. (Instrument Data Sheet 80-1) Contains descriptions and schematic drawings of four typical applications of the instrument, as well as general technical information. **Fielden Instrument Div., Robertshaw-Fulton Controls Co.,** 2920 N. 4th St., Philadelphia 33, Pa.

LAWSON MULTIPLE HEAD DRILL. (4 p. Folder) Contains illustrated sales copy on the Model "S" Lawson multiple head drill, as well as the simplified bench-type Lawson hollow drill sharpener. **E. P. Lawson Co.,** 426 W. 33rd St., New York 1, N.Y.

POTDEVIN COMBINATION 12" MARGIN AND SHEET GLUER. (Circular) Describes and illustrates this new combination used for accurate coating of very thin materials. **Potdevin Machine Co.,** 285 North St., Teterboro, N.J.

QUICK GUIDE FOR 1956 (Catalogue TCD-17) Contains complete pricing information and detailed descriptions of G-E service entrance devices for homes, farms, commercial and light industrial installations. **Assemblies & Components Sales, General Electric Co.,** 87 Whiting St., Plainville, Conn.

PRECIPITRON ELECTRONIC AIR CLEANER. (Booklet B-1425) Provides pictures, drawings and specifications of Precipitron. Also includes installation, operation and maintenance information. **Westinghouse Sturtevant Div., Dept. T-079,** 200 Readville St., Hyde Park, Boston 36, Mass.

POCKET DATA BOOK (TIS 2575) Features simplified welding procedures for every base metal. **Eutectic Welding Alloys Corp.,** Flushing 58, N.Y.

SANDY HILL DRYERS AND DRYER SECTIONS. (Brochure) Gives details and pictures of their methods of quality control and engineering background. **Sandy Hill Iron & Brass Works,** Hudson Falls, N.Y.

TUBE TURN WROUGHT IRON FITTINGS AND FLANGES. (Folder) Gives dimensional data on sizes from ½" through 12"; discusses the physcial properties of the material and illustrates typical applications. **Tube Turns,** 224 East Broadway, Louisville 1, Ky.

WEATHER PROTECTED MOTORS FOR OUTDOOR INSTALLATION. (Bulletin 05B7874B) Includes illustrated sales copy and cross section photograph shows mechanical features. **Allis-Chalmers Mfg. Co.,** 994 S. 70th St., Milwaukee, Wis.

What a difference COLOR makes!

Wouldn't it be nice if colored napkins could get the kids to clean their plates! We can't go *that* far, but we do know this — colored napkins (and many other paper products) are becoming more and more popular.

Our technical staff has the know-how to help you keep pace with this trend to color. If you want exactly the right shade . . . or maybe a distinctive new one . . . the most economical combination of dyes . . . please call on us. We'll be glad to help. Then watch your paper products move off the shelves! Write E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Dyes and Chemicals Div., Wilmington 98, Delaware.

Color sells more . . . for your customers and you

DU PONT
REG. U.S. PAT. OFF.

Du Pont Dyes

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

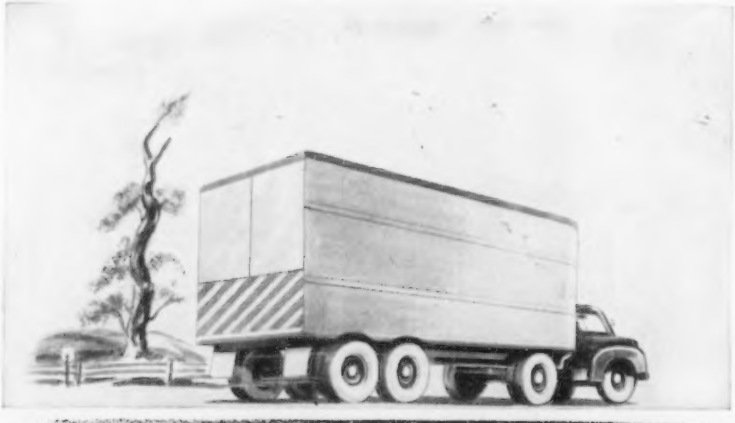
NEWS OF CONVERTERS

OF PAPER AND PAPERBOARD

Multiwall Bag Plant Slated for Saskatchewan

Continental Paper Products, Montreal, Que., a subsidiary of the International Paper Co., plans to open a plant in Saskatchewan later this year to manufacture multiwall bags.

Vernon E. Johnson, CIP president, said the $750,000 plant would employ about 25 persons initially and would be the only one of its kind between Winnipeg and Vancouver. It will be the first western venture for the company which now operates plants at Cap DeLa Madeleine, Que., and Ottawa. The site will be announced soon.



CHESTNUT CORES

Tough in Everything...

BUT DELIVERY

Mead Cores long have been famous for the toughness they derive from chestnut and other hardwood fibers, and the consequent rigidity and uniform strength that is so desirable in every core you use for your paper. To this high quality Mead adds fast service that in emergency can deliver cores to many paper mills in less than 24 hours! Now you can get the *best, faster!* Let us make and send a free sample core to your length and crush specifications. You'll like it! Write or call us today.

THE MEAD CORPORATION

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MEAD board

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NEWARK 2, NEW JERSEY . . . 10 Commerce Court
DETROIT 35, MICHIGAN . . . 18045 James Couzens Hwy.
BOSTON 10, MASSACHUSETTS . . . 43 Leon Street

New Box Plant For Webster, Mass.

Worcester Corrugated Box Co., a subsidiary of Lehigh Corp. of New York City, has leased 20,000 sq. ft. of manufacturing space on the first floor of building No. 3 at the former Webster Mills, Webster, Mass., according to Edward S. Kunkel, president and treasurer of the Dudley-Webster Realty Co.

A delay of from 12 to 14 weeks is anticipated before actual operations get underway. The time is required for extensive renovations of the property and installation of machinery.

Melvin Johnson is president and treasurer of the new company.

The firm's decision to locate their new subsidiary in the former Webster Mills followed an engineering survey of the building by Charles T. Main Associates of Cambridge. A reinforced concrete floor will be laid and other minor structural changes effected.

New Envelope Plant For Boone, Iowa

Heinrich Envelope Co., Minneapolis, Minn., has announced plans to build a plant at Boone, Iowa.

Heinrich officials said they will build a one-story building containing 20,000 sq. ft. of floor space.

Most of the necessary machinery is already purchased but officials said that due to intricate machinery which will have to be added, the Boone plant will not reach maximum capacity for two years.

Buys Security Carton Co.

The Star Box & Printing Co., of Chattanooga, Tenn., has purchased the Security Carton Co. in Mobile, Ala., and is operating it as a department of Star, it was announced by John S. Fletcher, chairman of the board of the Chattanooga company.

Chairman Fletcher said the acquisition was an outright purchase and included the plant, machinery and stock of Security. J. R. Dorsey, president of Security, will remain active in heading the business.

Star Box manufactures paper boxes of all kinds, corrugated shipping cases, folding paper packages, cartons and other paper products. Its plant and office are at 1809 Chestnut St., Chattanooga.

John G. Kain Jr. is president and treasurer of Star Box; Thomas H. Jones is sales manager; Foster A. Jones Jr., vice-president, and John S. Fletcher Jr., secretary.

TISCO®

DEMOUNTABLE JORDAN PLUG SLEEVES are real money-savers

The formerly complicated and time-consuming maintenance job of refilling or replacing a Jordan plug can now be accomplished in a fraction of the time. With the TISCO Demountable Jordan Plug Sleeve, the worn plug and shaft are withdrawn from the engine housing, three bolts are removed, and the sleeve taken quickly from the shaft centers. The new sleeve is then fitted over the centers which are permanently adapted to the shaft. The holding bolts are replaced and the assembly is again ready for use.

An additional money-saving feature of this design is the elimination of transportation costs covering shipment of shafts for factory installation of plugs.

Not only do you get faster changeover with TISCO Demountable Plug Sleeves, but you get much longer service because they are soundly cast of wear-resistant TISCO Manganese Steel. Where highly acid conditions prevail, TIMAXX acid and wear-resistant alloy is recommended.

Ask for further information regarding Demountable Jordan Plug Sleeves and Liners, Beater Rolls and Bed Plates, Rag Slitters, Pulp Wood Conveyor Chain, Log Haul Attachments, Barking Drum Chain and other chains, Sprockets, and miscellaneous castings designed to meet your own operating requirements.

TAYLOR-WHARTON CO.

DIVISION OF HARSCO CORPORATION

HIGH BRIDGE 2, NEW JERSEY

Birmingham, Ala. Chicago, Ill. Cincinnati, O. Easton, Pa. New York, N. Y.

OBITUARIES

William J. Warner, 66, president and one of the founders of the Plastic Coating Corp., Holyoke, Mass., died April 1 at his home following a long illness.

President of the firm since its founding, he had started his career in the paper industry in 1908 with the Holyoke Card and Paper Co. He was named vice-president of the Marvellum Co. in 1929 and in 1932 assumed his post as president of plastic Coating.

Arthur D. Huff, 90, former sales manager for the Canadian Export Paper Co., died March 27 in Montreal. He also had been associated with the Riordon Pulp and Paper Co. and the International Paper Co. Retiring in 1948, he continued to serve International Paper as traffic counsel.

Nathan Small, 60, died March 21 in Los Angeles, Calif. He was the owner of the Nehms Paper Carton Co. in Los Angeles. His plant, which was closed on March 24 during Mr. Small's funeral, suffered $10,000 worth of damage on that day.

Ward Ray Howard, former vice-president and general manager of Howard Paper Co., Urbana, Ohio, died April 1 in Lorain, Ohio.

Mr. Howard had been a resident of Urbana since 1919 when he became a member of the Howard firm, forerunner of Howard Paper Mills Inc. He was associated with his brothers, H. Maxwell and Lucius S. Howard, both of whom preceded him in death.

Ray G. Rogers, 69, a tour boss for the Ohio Boxboard Co., Rittman, Ohio, died at his desk at the plant at about 3 a.m. on March 24 of a heart attack. He had been with the company 26 years and had been active in the paper industry all his life.

Mr. Rogers entered his office at 2 a.m. after having completed his first round of the plant on the midnight shift. Co-workers discovered his death at 3 a.m. He came to Rittman from Tonawanda, N. Y., in 1930.

Among his survivors is a son, Ray B. of Rittman, a public relations representative for the boxboard company.

Ernest Smith, for the last five years Canadian representative for the Gibbs-Brower Co., White Plains, N. Y., died quite suddenly of a heart attack on April 7 in Hamilton, Ont. Mr. Smith was well known in the paper industry of Canada and the United States.

For many years he was employed by Appleford Paper Products Ltd. of Hamilton, a subsidiary of KVP Co. He had been a vice-president with Appleford.

Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Mar. 3	Mar. 10	Mar. 17	Mar. 24	Mar. 31
1956	102.1	101.7	103.9	103.9r	101.9
	Mar. 5	Mar. 12	Mar. 19	Mar. 26	Apr. 2
1955	98.8	97.3	97.6	97.6	98.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	93.6	96.6	97.9	98.0	99.3	97.4	85.5	96.2	93.8	101.2	100.6	94.0	94.9
1956	98.9‡	101.5‡											

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1949	1950	1951	1952	1953	1954	1955	1956
Year to Date	87.2	95.1	100.2	97.0	94.6	94.1	95.3	101.2
Year Average	83.7	95.8	98.0	88.6	92.3	91.6	94.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

	Mar. 3	Mar. 10	Mar. 17	Mar. 24	Mar. 31
1956	99	100	99	98	101
	Mar. 5	Mar. 12	Mar. 19	Mar. 26	Apr. 2
1955	96	95	97	95	95

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	92	95	96	94	97	97	84	99	97	102	101	92	96
1956	100	100	99										

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING Mar. 31, 1956	LAST WEEK ENDING Mar. 24, 1956	CUMULATIVE TO DATE Jan. 1, 1956 to Mar. 31, 1956
% Activity	101%	98%	100%
	Tons	*Tons*	*Tons*
Total Production	290,965	285,966	3,671,684
Liner	94,595	88,941	1,238,490
Corrugating Material	45,605	43,653	584,890
Chip & Filler Board	7,533	6,545	79,537
Total Containerboard	147,733	139,139	1,902,917
Folding	50,780	53,885	665 313
Set-Up	12,670	12,268	169,504
Special Food Board	24,465	22,950	291,773
Other	55,317	57,724	642,177
Total Boxboard	143,232	146,827	1,768,767
Total Orders	*Tons*	*Tons*	
Received	291,219	271,210	
Unfilled End of Week	546,994	554,885	

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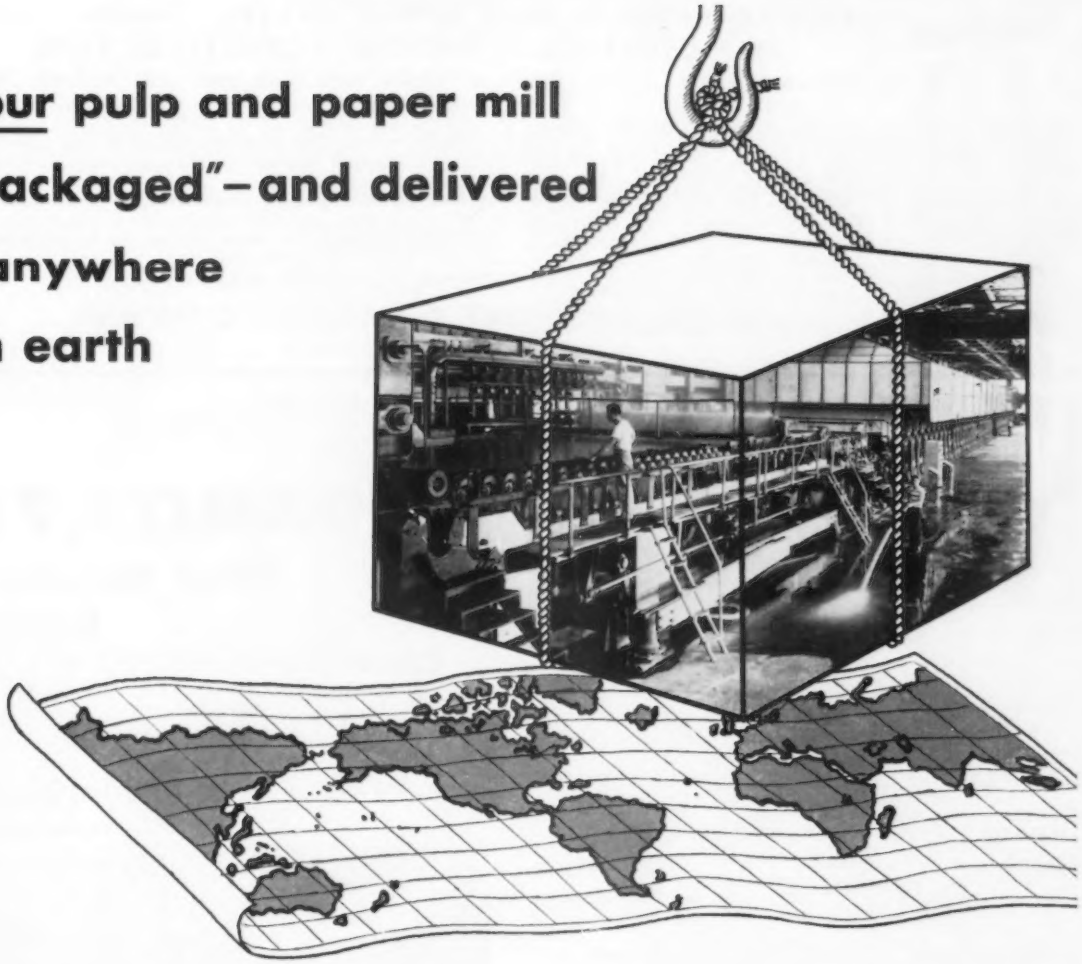
Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.
Surveys • Reports • Design
Construction • Modernization

Your pulp and paper mill "packaged"—and delivered—anywhere on earth



We are now building Mexico's first newsprint mill. This $12 million cooperative venture of Mexican, Canadian and U. S. interests at Tuxtepec, State of Oaxaca, will produce 30,000 metric tons of newsprint per year from Mexican pine—half the annual newsprint requirements of Mexico—with machinery manufactured by our affiliated companies.

Behind this concept of "packaged" paper mills stands our world-wide organization with over 100 years of experience in pulp, paper and machinery. We are equipped to render you *any or all* of the following services:

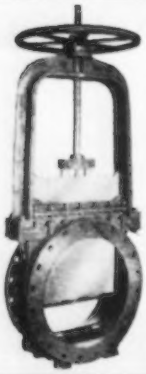
1. Conduct a preliminary technical and economic survey and prepare an appraisal report.
2. Engineer the complete project in cooperation with the world's leading consulting engineers.
3. Produce and deliver all the pulp and paper machinery and other necessary equipment that cannot be produced in the country where the mill is to be built.
4. Supply the necessary trained personnel to assure proper operation of the project until local workers can take over.
5. Assist the local group to obtain financing within the currencies available in the particular country, such as dollars, sterling, francs, D-Marks, Finn-Marks, etc.
6. Assist the local group to obtain the necessary raw materials and chemicals to operate the mill after it is built, as well as sell the output through Parsons & Whittemore's own offices.

Our book—"Growing with the Paper Industry Since 1853"—will give you more information on our ability to handle any pulp and paper mill project through all of the necessary steps from inception to completion or any combination of responsibilities that best suits your interests. Write for it without obligation.

THE PARSONS & WHITTEMORE / LYDDON ORGANIZATION

World Leaders in the Development of Pulp Mills for the Use of Bagasse, Straw or Other Vegetable Fibres

250 Park Ave., New York 17, N. Y. **35 New Bridge St., London EC4, England**



RECORD PAPER & PULP STOCK VALVES "BONNETLESS" SELF CLEARING---"RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- **The "FAST THREADED" screw stem and ball bearing speeds valve operation.**
- **The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.**
- **The yoke mountings are such that yokes for various methods of gate operation are interchangeable.**
- **Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.**

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS"

RECORD FOUNDRY & MACHINE COMPANY

LIVERMORE FALLS, MAINE, U. S. A.

Westvaco Quality Papers

Westvaco manufactures a wide range of high quality paper products — from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality — Westvaco's guarantee of top performance.

Printing Papers . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

Writings . . . Bond, mimeo, duplicating, ledger.

Bristols . . . Index, post card.

Converting Papers . . . Label, tablet, envelope, lining, file folder, tag, tabulating card, coating raw stock.

Bleached Boards . . . Cup, milk bottle, folding boxboard, frozen food container.

Kraft Papers . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

Containerboard . . . Linerboard and corrugating medium.

Market Pulp . . . Bleached and unbleached sulphate.

West Virginia Pulp and Paper Company
230 Park Avenue, New York 17, N. Y.
35 East Wacker Dr., Chicago 1, Ill. • 503 Market St., San Francisco 5, Cal.

UFORMITE® 711
Wet Strength Resin

Lets you repulp broke . . . aged or fresh . . . easily

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Improves any pulp... from rag to groundwood

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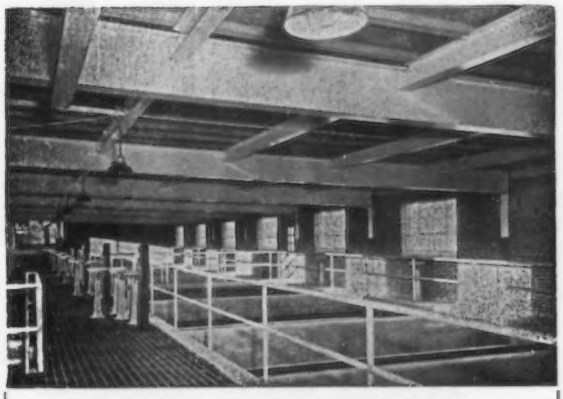

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DETERMINE SEWER LOSSES ACCURATELY

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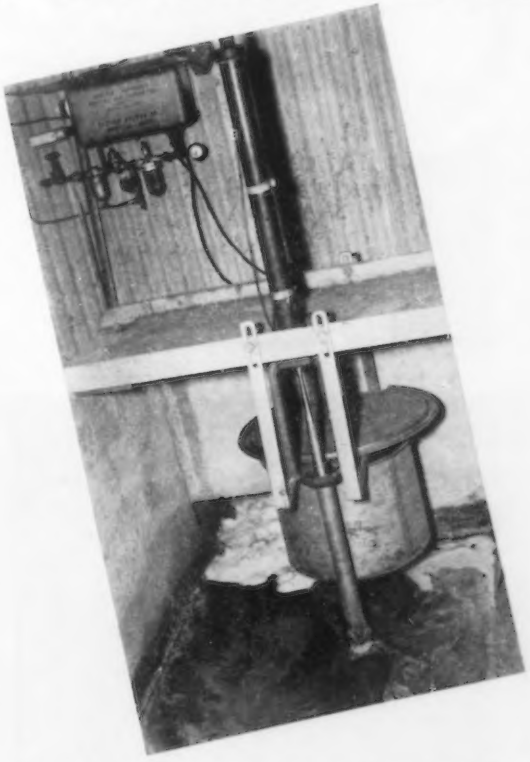

How much valuable fiber and chemical are you losing to the sewer—how efficient is your white water conservation? You'll have the precise answers to these important questions when you install a DeZurik Sampler.

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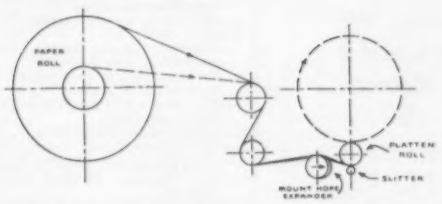
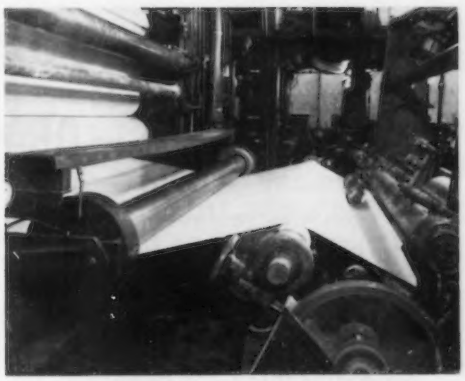


INSTALLATION ON SLITTER REWIND



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We wish to add a graduate engineer to our Staff. To take charge of power, maintenance, and plant modernization. Prefer man with experience on book and offset grades. Please give us complete data on your history with original application. Such information will be held strictly confidential.

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1—80" 4 color Waldron rotogravure press
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18—Seybolds—1-56" Precision, 56" 12Z; 44", 50" & 74" 10Z; 44", 50", 56", 64" & 84" Daytons; 44" & 74" 20th Century; 34", 38", 44" & 75" Holyokes. 36" Model 2X; 2Y 34" late type Model CHB. 3 Oswegos—44", 57" & 68". 4—Sheridans—30", 36", 40" & 65".

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1—162" Type 19
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1—62" Type 10-84
1—62" Type 40 1AF
1—62" Type 26-7AM
1—52" Type 10-6
1—50" Type 6
1—42" Type 9-5-A
1—42" & 62" Type 6
1—42" Type 10-5A, 30" rewind
1—42" & 1—52" Type 24-2A
1—42" Type 40-50 (Roll Doctor)
1—40" Type 40

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1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnston model 12 score cut—VS drive
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1—Model 111-C Potdevin F & S cellophane bag machine. GE Electric Eye.
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1—64" Sheet Paraffining Machine
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7—Die Presses 1—50" x 22" & 1—44" x 22" Sheridan, 1—38" x 24" Type UA—2—17" x 42" Seybolds.
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1—2 oz & 1—½# to 1# Cellophane Bag Machines
2—Paper Converting Machine Co.'s ¼ Fold Napkin Machines. 1—2 web.
1—Hudson-Sharp 13½" x 13½" ¼-Fold Napkin Machine
2—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines
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1—80" Hamblet Duplex Rotary Sheeter with backstands & layboy
1—90" Moore & White Single Rotary Sheeter with backstands
1—45 & 1—#5 Potdevin Sack Machines
1—48" Hudson Sharp Embosser-tinter

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1—60" Holyoke 10 Roll Stack of Super Calenders.
1—54" Holyoke, 7-Roll Stack of Super Calenders
3—Nash Vacuum Pumps, L-5, L-6 and L-7
5—3 Pocket Grinder Stones, 26" & 27"x54"
1—Sutherland Right Hand 42" Disc Refiner

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1—Dilts high speed iron tub. Roll 62" dia. x 54" face with 75 HP motor & controls.
1—E. D. Jones "Bertram" 1500 lbs. Roll 72" x 63". C. I. Tub. Complete with Foxboro Air Cylinder Control and washer. Driven by 3 h.p. gear head motor. Used 2 years.

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3—136" face x 54" diameter—stainless steel covering.

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46—Chilled Iron Rolls—Assorted sizes.

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1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Black Clawson 82" 3 roll with doctors.
1—Black Clawson 82" 5 roll with doctors.
1—Lobdell 124"—9 roll stack—water cooled bearings.
1—Sandy Hill 84" 7 roll, with doctors.

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3—Hamilton Parallel enclosed Drives; 1—60 h.p.; 1—100 h.p. and 1—125 h.p.
9—Reeves Open and Enclosed, Sizes 0-D, 1-D, 1E, 3F, 3G, 5E, 6C.

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7—43" face & 36" dia.—frames, gears & bearings.
3—52" face x 48" diameter—gears & bearings.
1—52" face x 24" diameter—gears and bearings.
15— 84" face x 36" diameter, with gears.
1— 88" face x 36" diameter.
1—104" face x 36" diameter.
1—104" face x 48" diameter.
10—109" face x 42" diameter.
1—110" face x 42" diameter, with bearings.
1—116" face x 36" diameter.
1—116" face x 48" diameter.
6—120" face x 48" diameter with gears, bearings and felt rolls.
1—124" face x 48" diameter.
1—126" face x 48" diameter.
13—127" face x 42" diameter.
1—130" face x 48" diameter.
9—160" face x 36" diameter, gears & bearings.
44—160" face x 48" diameter. Complete dryer section including felt dryers, felt rolls, etc.
36—132" face x 42" diameter with gears, bearings and frames.
18—58" face x 36" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
64—46" face x 24" diameter. Complete with 2 deck frames, gears, bearings and steam joints and felt equipment.
24—46" face x 48" diameter. Complete with gears, bearings, steam joints and felt equipment.

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1—Downingtown 138" x 24" Extractor Roll with 19" diameter rubber riding roll—all anti friction bearings.

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1—Oliver Continuous Filter, Cylinder 8' Diameter x 10' Face, Steel Vat. Complete with repulper and drives with motors. Used 2 Months.

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3—8 plate Sandy Hill roller shoe with scrapers.
2—8 plate Bagley & Sewall with scrapers.
2—12 plate Sandy Hill, anti friction bearings.

JORDANS

1—Appleton #2 anti-friction Bearings with 150 HP Westinghouse, Synchronous Motor and Stainless Steel filling.
1—E. D. Jones pony Jordans 3/16" stainless steel fillings.
1—E. D. Jones Pony Jordan, ball bearing, with stainless steel filling.
1—Smith & Winchester standard with granite filling.
1—Noble & Wood Bull Dog Jordan. Anti friction bearings with coupling and motor base.
1—Appleton #2—anti friction bearings.

KNIFE GRINDERS

1—132" Rogers with motor. Used 5 months.
1—130" Hanchett belt driven complete with coolant pump, and 2 spare wheels.
1—92" Seybold with motor.

LABORATORY EQUIPMENT

1—Biggs 6' diameter Rotary Digester 100# pressure.

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12—125 H.P. Westinghouse synchronous enclosed. Brand new. 440 volt, 720 rpm forced air ventilation with starters.
1—Westinghouse 300 h.p., 388 r.p.m., 440 v., 3 phase, 60 cycle.

PASTING MACHINE

1—Hudson Sharp 72"—3 roll Paste Applicator with Link Belt Reducer and 25 h.p. motor. (New 1946).

PULP EQUIPMENT

3—2 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—3 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—Lannoye Pulper—enclosed drive and 30 h.p. motor.

PULP PRESSES

1—Hydraulic Machine Co. 250 tons 30" x 36" platen, 48" daylight, 30" stroke, 16" ram —upstroke. For baling dry pulp.

PUMPS

44—Centrifugal Pumps open & closed impellers.

REELS

1—Pusey & Jones 162" drum reel.
1—Downingtown 104" 2 bowl reel.
1—138" English Drum Reel.

REFINERS

1—Dilts #1 Hydrafiner with totally enclosed motor.
1—Dilts Hydrafiner.
2—34" Sutherland Disc Refiner, stainless steel discs. 1—left hand and 1—right hand.

ROLL GRINDERS

1—Lobdell Model 3MB for 30" diameter rolls —19 ft. 6" bed. Complete with crowning device and 15 h.p. main motor drive and 2 10 h.p. motor grinder wheel drives.

ROLLS—PRESS, COUCH, etc.

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS

1—#2 Bird—Copper vat.
4—#2A Bird with copper vats.

SHEETERS

1—Cameron 124" quick change double slitter assembly for board sheeters. Complete with 16 pneumatic slitters.
1—Moore & White simplex 114" sheeter with Maxson Layboy, overlapping delivery, 8 roll backstand motor and starter.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 81" duplex with Erie Layboy 12 roll backstand and motor.
1—Hamblet 75" with layboy and backstands.
2—Hamblet 110" single knife sheeters.
1—Beck 45" sheeter.
1—Beck 48" with jogger.
1—Hamblet 55" with 3 roll backstand.

SHREDDERS

2—Mitts & Merrill Air Fluff Paper Shredder. Used 9 months.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders, Style 36.

SLITTERS AND WINDERS

1—Cameron 42" Model 6.
2—Cameron 165" Model 18—Complete with motor drive and roll ejector.
1—Cameron 194" Model 19. Anti-friction bearings, 2800 f.p.m., equipped with air operated quick change, constant tension and roll ejector.
1—Moore & White 66"—two drum.
3—Essex 42" center wind—30" duplex rewind. Anti friction bearing equipped.
1—Cameron 42" Model 9-5.
1—Cameron 62"—Model 6.
1—Schultz 18"—Automatic with motor.

STOCK PUMPS

1—Shartle 10 x 20 single plunger pump.
1—Moore & White 10 x 16 Triplex.
1—Beloit 8 x 10 Triplex.
1—Downingtown 8 x 18 triplex, with enclosed drives and motor.

SUCTION BOXES

5—192" Aluminum Suction Boxes.

SUCTION COUCH ROLLS

2—Beloit 25" diameter x 114" face, anti friction bearings, with stands. Direct drive.
1—Millspaugh 30" diameter x 192" drilled face with Trunnion roller bearings, stands, etc.
1—Sandusky suction couch 25" diameter x 122" drilled face.
1—Sandusky suction couch 18" diameter x 122" drilled face.
1—Sandusky 28" diameter x 162" drilled face complete Trunnion Roller Bearing.
1—Sandusky 22" diameter x 135" drilled face trunnion roller bearings.
1—Sandusky 18" diameter x 116" drilled face.

SUCTION PRESS ROLLS

1—Millspaugh 30" diameter x 194" drilled face with bearings, stands, etc.

SUPERCALENDERS

1—Norwood 30" 5 roll, complete with motor drive.

TISSUE AND TOWELING MACHINE

1—B & S 90" single cylinder machine. Complete including pumps, piping, valves, enclosed drive and VS motor drive. Full details on request.

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1—Oswego 50".
1—Seybold 94" Model 15 ZJ.
1—Seybold 64" Model 12-Z.
1—Seybold 84" Dayton with motor and spare knives.
1—Seybold 72" Dayton.

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1—Nash H-3 with 5 h.p. motor.
2—Nash H-4.
1—Nash L-3 with totally enclosed 5 h.p. motor.

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1—New Valley Iron Works 156" x 36" monel lined inlet and head box.
2—Valley Iron Voith Inlets, adjustable 83" to 86"—Brass lip, stainless steel apron.
1—Valley Iron Works—106".
1—Valley Iron Works 151" stainless steel inlet and head box.
1—Bagley & Sewall 144" stainless steel clad high speed inlet and headbox.

VORTRAPS

7—Nichols 4" stainless steel Vortraps—rubber lined heads.

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1—Rogers 72" x 48" Wet Machine. Double press sections.

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1—10 ft. diameter x 132" face with bearings
1—Beloit 12 ft. diameter x 140" face—75 lb. steam pressure.

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Broad experience with kraft pulps; specialty papers and paper board. If you need better quality and increased production call or write Herbert Maus — Phone 204J — Box 149 — Springhill, Louisiana. 32 years experience — results guaranteed.

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Rapidly expanding aggressive foil & paper converter located in upper midwest has excellent opening for a high calibre man for laboratory development of flexible packaging materials including paper, foils, films, adhesives and extrusion coatings. Must be a college graduate with at least 2 years experience. Salary open. Excellent company benefits. Write Box 56-121, care Paper Trade Journal, giving complete information.

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Mechanical and electrical by large stable corporation. Good future for desirable applicants. Give references, education, experience and salary expected in first letter. Location south—city of 30,000. Excellent living conditions. Address Box 56-119 care Paper Trade Journal.

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Paper manufacturer with multi-plan operation has opening for recent engineering graduate in its staff Quality Control organization. It is desirable that this man have quality control or statistical training. More important, however, is that this man be a self-starter with initiative and ability to work with others. Location: Western Massachusetts.

Please reply to Quality Control Coordinator, Peter J. Schweitzer, Inc., Lee, Massachusetts.

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Research Department of progressive organization needs chemical engineers to plan, supervise, and conduct research in papermaking and in all phases of coating of paper. Projects will involve both fundamental and practical studies in well equipped laboratory.

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For more detailed information, send complete resume of education and experience to:

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All replies will be held confidential.

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WANTED—Young, energetic man to manage, with option to buy, small profitable Converting Plant servicing New York State and New England. Reply Box 56-106 care Paper Trade Journal. A-16

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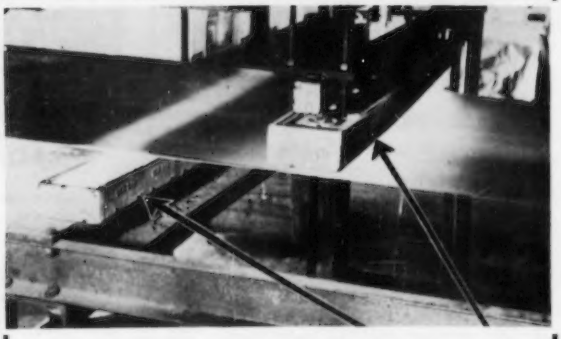

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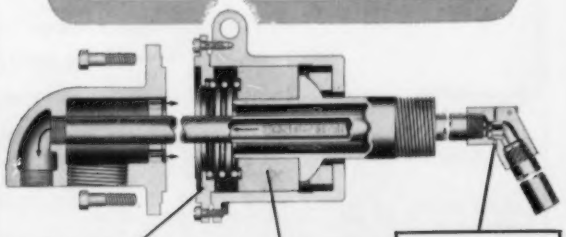

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PAPER TRADE JOURNAL

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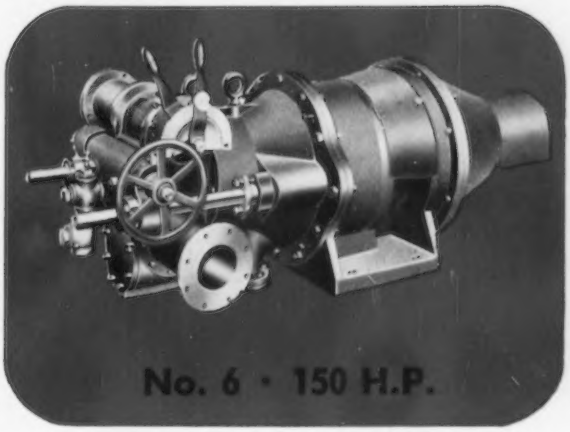

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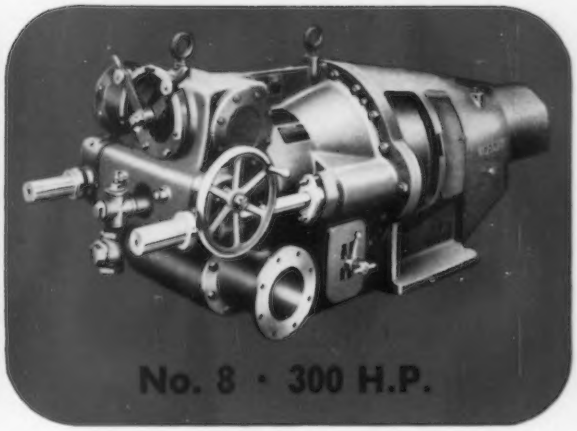

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